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ABSTRACT

This report describes research on in-school career development and its consequences for youths' work experiences in the first few years beyond high school graduation. Chapter 1 discusses career development and describes the general framework for the longitudinal study. Chapter 2 describes project design and sample characteristics. Chapter 3 overviews the data organized around these variable groupings: demographic and background characteristics, skills and knowledges, planning and plans (including values), and activities of adolescents and young adults. The final section details analysis issues. Chapter 4 describes the development of six scales indexing and organizing dimensions of pre- and extra-occupational manifest interests. In Chapter 5 six scales indexing and organizing dimensions of occupational values, work routines, and job returns/rewards are described. Chapter 6 examines stability of interests over high school years and whether these interests effect educational outcomes in high school and work values. Chapter 7 addresses the planning process (career decision making) during adolescence: chapter 8 explores content of those plans. In chapter 9 patterns of employment in secondary school and routes to employment are discussed. Chapter 10 and 11 study the routines and rewards aspects of youths' employment experiences during early postsecondary years. Chapter 12 discusses results. Data tables are appended. (YLB)

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Pre-Occupational Interests, Occupational Preferences and Work Experience: Career Development through Early Adulthood

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Chapter 1 -- The Career Development Process

1.1 PSYCHOLOGICAL AND SOCIOLOGICAL PERSPECTIVES ON CAREER DEVELOPMENT

How youth come upon their occupational preferences and the importance of those preferences for later career development have been studied extensively by both vocational psychologists and sociologists. Typically, however, research and theory originating in these two disciplines reflect quite different emphases (Blau, et al., 1956). The vocational psychology literature directs attention to the personality characteristics, needs, values, and motivations of individuals -- either from a situational or a developmental perspective -- and to the importance for occupational choice of compatibility between personal abilities and needs and the occupation's requirements, activities, and rewards. The sociological approach concentrates on socioeconomic and demographic (e.g., class, ability, race, sex, age) characteristics, achievements (e.g., educational performance), social networks (e.g., encouragement by significant others) and structural constraints as determinants of occupational choice and attainments. Although these concerns are hardly mutually exclusive, in actual application they tend to be treated as such. The present research is intended to straddle these traditional disciplinary boundaries. We do so by incorporating many of the substantive concerns and insights to be found in vocational psychology theory and research on career development into the orienting framework of the socioeconomic life-cycle, a distinctively sociological creation. The result, we believe, will be a much richer appreciation and characterization of the complexities of career development processes over the primary and secondary grades than would be achieved through either perspective alone. To establish the necessary foundation for this undertaking, we next provide a brief overview of both of these traditions and a consideration of their respective views of "work."

1.1.A. Vocational Psychology

In the 1950's the field of vocational psychology witnessed a significant reorientation (Jordaan, 1974:263), coming to consider occupational choice as a developmental rather than a structural problem:

> The extensive work concerned with the structures of vocational preference....has emphasized methods and plans to organize occupational knowledge and to predict occupational choice (occupational classifications, factor analyses, occupational differences). Another more recent orientation is more concerned with the processes of personal development which lead to different vocational preferences....Although these orientations have different goals, they supplement one another. In a sentence, one organizes information about occupations, and the other outlines how people get there (Holland, 1976:532).

Ginzberg and his colleagues (1951) were among the first to conceptualize the problem of occupational choice in a developmental framework. They conceived of the process by which the individual comes to define his lifework preferences as being maturational or developmental, consisting of a progression through what they labeled the "Fantasy," "Tentative," and "Realistic" stages of the Career Decision Making Process. Their original formulation, although subsequently revised and superseded, has nevertheless contributed substantially to more recent developmental thinking: that there exist developmental stages; that it becomes increasingly difficult to reverse "occupational direction" once one has moved through a particular stage; that an optimal fit between desires or interests and options is often problematic; that appropriate role models are critical to effective career decisionmaking; and the suggestion that career processes may differ across sex and socioeconomic groups (Osipow, 1973:98-102).

Super and his colleagues (e.g., Super, 1953; 1963; Gribbons and Lohnes, 1968; 1969), in their refinement of this early developmental theory, highlight the importance of the self-concept for career development. They maintain that the individual tends to select occupations that are perceived to be most consistent with his view of self. This selection is done successively during developmental stages which encompass the virtual entirety of the individual's lifespan. Thus, the individual is seen as progressing through several stages: Growth; Exploration (subdivided into the Fantasy, Tentative, and Realistic phases); Establishment (subdivided into the Trial and Stable phases); Maintenance; and Decline (Super, 1953:189-190). The progression through the last four stages -- Exploration through Decline -- requires completion of five developmental tasks: Crystallization (ages 14-18); Specification (ages 18-21); Implementation (ages 21-24); Stabilization (ages 25-35); and Consolidation (ages 35 and over). These are assumed to be completed in overlapping periods during the life-cycle. Crystallization and Specification, for example, are to be accomplished during adolescence and Implementation begins with entry into the labor force.

During the Crystallization stage, the one most relevant to the present study, the individual is faced with numerous tasks of incremental complexity. One first must become aware of the need to crystallize, draw upon available resources, differentiate interests and values, formulate a generalized preference, and plan for the implementation of that preference. During the Specification task period the adolescent must come to appreciate the need to focus on previously formulated general preferences, use resources to aid in this task, differentiate interests and values, specify a vocational preference, and plan for the preferred occupation. The Implementation tasks require planning to implement preferences, execution of these plans, and actual job entry (foregoing from Super, 1963:84-91). The successful completion of these tasks moves the individual from the Fantasy substage of the Exploration phase to the Trial substage of Establishment; the individual has progressed from generalized dreams and fantasies to the actual entrance into the labor market in an occupation of his choice. The planning process, as distinct from the specific plans that emerge as a result of that process, is itself quite important in this developmental framework. This is one of several considerations that are quite prominent in the vocational psychology literature but that tend to be slighted by sociologists in their research on career aspirations. The various respects in which these perspectives complement one another will be developed more fully after we've completed these preliminary overviews.

The particulars of this framework all have received some empirical support (see Osipow, 1973:142-163 for a summary of much of this work), the major research undertakings being the Career Pattern Study (Super, et al., 1967; Jordaan and Heyde, 1979) and the Career Development Study (Gribbons and Lohnes, 1968; 1969). Osipow (1973:163-69) suggests that this theoretical body of work and its empirical offspring will have a major impact upon the field of vocational psychology in the years to come.

An impressive body of research (e.g., Tibbetts, 1975; Barclay, 1974; Vondracek and Kirchner, 1974; Siegel, 1973; Dinklage, 1969) demonstrates that youth begin to formulate occupational aspirations well before age 14, often as early as the pre-school and early childhood periods of Growth. While these aspirations are largely fantasy-based, it is clear that even by this early period the occupational aspirations of boys and girls tend to conform to the traditional sexual division of labor (Tibbetts, 1975; Barclay, 1974; Siegel, 1973). Of course, the later career processes of men and women differ as well (Zytowski, 1969; Gysbers, Johnston, and Gust, 1968; Astin, 1968; 1967). Despite this accumulation of evidence regarding sex differences in career development processes, much remains to be learned about how these differences arise and are maintained (Hilton, 1975). Holland (1976:550-51) has urged parallel inquiry for other minorities, especially blacks.

There is also evidence, however, that aspirations even at the end of high school (the end of the Exploration stage) often remain quite unrealistic (Gribbons and Lohnes, 1968; Jordaan and Heyde, 1979) and that information about occupations and the way labor markets work is quite skimpy (DeFleur and Menke, 1975). Of course, "stages" such as those identified by Super are at best rough benchmarks, and certainly do not represent the necessary acting out of some inherent developmental process. For example, approximately one-half of the individuals in the Career Development Study (Gribbons and Lohnes, 1968; 1969) do not appear to be engaging in, much less accomplishing, "age-appropriate" developmental tasks (Jordaan, 1974:286). Relatively little is known about what factors might either contribute to or impede the successful "completion" of such stages. Thus, although there is indeed support for many aspects of the developmental approach to the career decision-making process, gaps in both theory and research persist.

Another major perspective in vocational psychology concerns itself with the relevance of personality attributes, interests, and abilities for occupational preferences. This often is referred to as the "situational" or "structural" perspective. The objective is to discern the "optimal" match between individual and occupation, with "optimal" usually assumed to involve the correspondence between the individual's personality requirements (broadly defined) and the occupation's ability to satisfy those requirements. This literature indicates that the salient dimensions of both the occupational structure and individual values and interests are relatively few (from 6 to 9) and are roughly parallel (Holland, 1976).

Roe (1956; 1957) was one of the first proponents of the "need-reduction" approach to vocational choice. Her theory was distinctly psychoanalytic, emphasizing the importance of childrearing practices for the development of the individual's needs. These needs (Maslow, 1954), in turn, can be satisfied through one's occupational pursuits. Study of the individual's background would lead to understanding of these needs, and thus of the occupational position which should be chosen to satisfy them. Holland (1959; 1966; 1973) advances another need-interest approach to the task of occupational choice. The present project draws extensively upon the particular classification of occupational interests and occupational types proposed by Holland. The details of this classification will be reviewed later. At this point we wish merely to make note of its intellectual heritage in theories of person-environment fit and in need-reduction models of occupational adaptation.

Various studies (e.g., Crites, 1969; Super, Kowalski, and Gotkin, 1967; Roe, 1956) suggest that the pattern of an individual's vocational interests, preferences, and eventual attainments demonstrates marked continuity over the life-cycle. Additionally, Holland (1976) summarizes much empirical research which demonstrates that both the Roe (1956) and the Holland (1959; 1966; 1973) occupational typologies have "enjoyed considerable success" as "attempts to organize occupational knowledge....and to predict occupational behavior from a theory of personality types and model environments" (Holland, 1976:533). Holland's theory of personality and of the reinforcement potential of occupational environments distinguishes six salient dimensions: (1) Social, (2) Enterprising, (3) Conventional, (4) Realistic, (5) Intellectual, and (6) Artistic (see Table B.1. for a more complete description of the Holland occupational typology). Empirical attempts to factor analyze interest inventories (e.g., Jackson and Williams, 1975) do consistently isolate a few major themes, very much akin to those suggested by the Holland classification (Holland, 1976:527).

In summary, then, the developmental perspective within vocational psychology concentrates upon the cumulative, sequential nature of the crystallization and stabilization of interests, while the situational approach concentrates upon the final outcome of "person-environment" fit. Here again, we encounter an important supplement to traditional sociological practice. The variety of both occupational dimensions and personality dispositions studied in this literature is much broader than is typical of sociological research, in which occupational status, prestige and/or earnings, and strivings therefore, are practically the exclusive concerns.

This is not to suggest, however, that there is little to commend in sociological research on career development and attainments. Quite to the contrary, in fact, there is much of value in what sociologists have studied and in how they have framed their research. We review this material next.

1.1.B. Sociology

Blau and Duncan (1967) and Duncan, Featherman, and Duncan (1972) initiated a stream of inquiry designed to chart the course of the socioeconomic life-cycle from early adolescence through labor market entry to eventual adult attainments. Their original goal was to understand the extent to which and the mechanisms by which social inequalities (in educational, occupational, and income attainments) are transmitted from generation to generation. Socioeconomic background factors and educational attainment were employed to predict the occupational attainments of white adult males. Later status attainment research undertook to identify the mechanisms through which socioeconomic background and ability influence educational attainment. The work in status attainment has come to subsume two major perspectives, one, most fully developed by Sewell and his colleagues (Sewell, Haller and Ohlendorf, 1970; Sewell, Haller and Portes, 1969; Sewell and Hauser, 1975), concerned with principles of socialization and the other concerned with selection and allocation processes in society and its various institutions, especially the school. In the socialization perspective,

> significant others are seen as having an influence on the goals of the young person, and these goals are viewed as instrumental in the attainment process. The theory anticipates that the encouragement by significant others will vary according to the social position and demonstrated ability of the child, and that this encouragement will affect the level to which he aspires. The family and school are seen as the institutional settings of this socialization process, and the significant others include parents, teachers, and peers (Kerckhoff, 1976:2).

On the other hand, the "allocation model" of status attainment

> minimizes the significance of variations in socialization outcomes as they influence in any direct way the individual's attainments and emphasizes the importance of societal forces which identify, select, process, classify and assign individuals according to externally imposed criteria. Rather than differential attainment being seen as due to variations in learned motives and skills, as in the socialization model, an allocation model views attainment as due to the application of structural limitations and selection criteria (Kerckhoff, 1976:3).

Both perspectives view external forces as impinging upon the individual adolescent's aspirations -- however, in the socialization framework these forces actually change the individual, while in the other allocation mechanisms are thought to constrain choices and options irrespective of aspirations.

Both approaches draw attention to the various institutional settings that individuals "pass through" in the transitions from childhood to adolescence and from adolescence to adulthood: the family of origin; the school; the family of procreation; and the occupational marketplace. Early experiences are thought to temper later ones such that outcomes at any point in the lifecycle are a complex function of the various critical life events that precede them. For example, the material resources, values, and socialization practices of the family of origin profoundly affect the quality, character, and quantity of schooling that youth receive. In turn, both schooling and these various characteristics of the family, the latter largely, but not exclusively, through their importance for the former, are of considerable consequence for occupational status achievements. This step-wide progression of influences in the status attainment process has now been documented in a large number of inquiries.

The framework is especially sensitive to the cumulative and sequential consequences for youth of their progression through various institutional settings over the course of one's social development. As this characterization suggests, the life-cycle perspective is perhaps best thought of as an orienting imagery, itself devoid of substantive content (although, as Horan, 1978, has recently observed, perhaps heavily laden with theoretical assumptions). It directs attention to settings, sequences and social history, but advances no specific propositions about relationships or consequences. In application, therefore, the shell of the socioeconomic life-cycle is filled out with theories of the middle-range borrowed from other literatures. Such versatility likely accounts for much of the appeal of the life-cycle framework.

This conceptual paradigm has contributed substantially to the understanding of various forms of social inequality in the outcomes of the career development process by allowing precise quantitative assessment of the contributions of specific social processes and forces to both adult attainments and to the differences in attainment levels between groups defined by various ascriptive criteria -- the status characteristics of one's family of origin, race, sex, ethnicity, and so forth (see, for example, Featherman and Hauser, 1976a; Treiman and Terrell, 1975; Alexander and Eckland, 1974; Jencks, et al., 1972;

Duncan, 1969; Blau and Duncan, 1967). One recurrent theme in this body of literature, indeed in the field of social stratification in general, is the importance of the vagaries of one's birth for one's adult life chances and the ensuing conflict between family ascription and normative commitments to "equality of opportunity." Level of educational attainment in particular has been shown to be an especially valuable resource in this literature, consistently ranking among the most important determinants of both occupational status positioning and of earnings. Thus, much status attainment research has undertaken to achieve a better understanding of inequalities of educational attainment as an important precursor to later socioeconomic inequalities.

These investigations have documented the pervasive effects of adolescent educational and occupational aspirations on adult attainments. Educational aspirations appear to be particularly important as determinants of educational attainment (Alexander and Eckland, 1975c; Sewell and Hauser, 1972; Sewell, Haller, and Portes, 1969) and thus indirectly of occupational attainment (Alexander, Eckland, and Griffin, 1975; Sewell and Hauser, 1975; 1972; Blau and Duncan, 1967; Alexander and Cook, 1979, and Kerckhoff, 1976, offer alternative interpretations for the evidence on this, however). Occupational aspirations, though still important, appear to be less readily accounted for by the background characteristics and socialization influences typically studied than are educational aspirations (Alexander and Eckland, 1975a; Alexander, Eckland, and Griffin, 1975; Hout and Morgan, 1975; Sewell and Hauser 1975; 1972). They also are less consequential for occupational attainments than are educational aspirations on their counterpart adult realizations (e.g., Alexander, Eckland, and Griffin, 1975; Sewell and Hauser, 1975; 1972).

A large body of research has concentrated on these adolescent goal orientations, documenting the importance of background characteristics (Alexander, Eckland, and Griffin, 1975; Sewell and Hauser, 1975; 1972; Williams, 1975; 1972; Sewell, Haller, and Straus, 1957), sex (Alexander and McDill, 1976; Hauser, Sewell, and Alwin, 1976; Hout and Morgan, 1975; Alexander and Eckland, 1974; Hauser, 1972; Sewell and Shaw, 1968; 1967), race (Kerckhoff and Campbell, 1977); DeBord, Griffin, and Clark, 1977; Porter, 1976; 1974; Portes and Wilson, 1976; Hout and Morgan, 1975), parental and peer influences (Otto, 1976; Kerckhoff, 1974a; Spady, 1970; Sewell, Haller and Portes, 1969; McDill and Coleman, 1965), and school process and achievement variables (Alexander, Cook, and McDill, 1978; Alexander and McDill, 1976; Alexander and Eckland, 1975a; 1975b; 1974) in the determination of status aspirations.

1.1. C. Complementarity and the Potential for Integration

In light of the preceding summarizations, the value of combining insights from the traditions of sociological and psychological research and theory should be readily apparent. We are especially impressed with the breadth of substantive issues that have attracted the interests of vocational psychologists, both developmental and structural. Especially valuable, we believe, is the importance accorded the planning process itself in this literature, its attention to non-aspirational facets of personality and other aspects of subjective orientation to the present and future, and its sensitivity to the importance for workers and for their career-development of non-status and non-pecuniary attributes of occupations. The sociological literature, on the other hand, in addition to its specific substantive focus, offers a conceptual framework, that of the socioeconomic life-cycle, that may be of considerable value in integrating many of these concerns, which even in the vocational psychology literature itself often are not particularly well integrated.

We, of course, are not the first to recognize the potential value of such a merger of perspectives, although there is pitifully little research that has followed through on this commendable and recurrent prescription. Krumboltz's (1975:13-20) catalogue of potentially important variables that usually are neglected by psychologists, for example, reflects precisely the concerns of sociologists: sex; race; family training experiences and resources; neighborhood and community influences, to name but a few. Dresch's (1975:2-3) schema of the career development process also recommends inclusion of socioeconomic status, academic aptitude and attainment, past school experiences, and interpersonal experiences. In fact, Dresch (1975:4) especially emphasizes that the educational decision-making process must be conceived of as a "fundamental aspect and integral component of the more general and evolving process of adult career-formation." This educational decision-making process has been, itself, the focal concern of much work in the status attainment or socioeconomic life-cycle literature (e.g., Alexander and Eckland, 1975a; Heyns, 1974). Additionally, many of the constraints that Lofquist and Dawis (1969:14-16) conclude operate upon individuals as they attempt to match interests and occupations are fundamentally sociological: social class; family and peer group influences; sex, race or ethnicity; differential access to job information due to specific placement in the educational and economic hierarchy (Parnes and Kohen, 1975). Super and his colleagues (1953; 1963;

Gribbons and Lohnes, 1968; 1969), Roe (1956), and Holland (1959; 1966; 1973) all note that such constraining, socializing, and allocating factors affect the individual's ability to achieve a suitable fit between her personality or self-concept and the occupational environment.

The sociological perspective also offers an important variant on the notion of "stage" as it typically is used in the developmental literature. Jordaan (1974:286) suggests that the developmental stages outlined by Super and his colleagues (Super, 1953; 1963; Super, et al., 1967; Gribbons and Lohnes, 1968; 1969) do not accurately reflect actual adolescent career decision-making progress. The occupational aspirations of senior high school students do not appear much more realistic than might be expected at the Fantasy period (Gribbons and Lohnes, 1968) in early adolescence. The assumption that interests, abilities, and values are continuously reviewed and revised and their correspondence with occupational positions assessed during the Exploratory stage may be misdirected. Roberts (1968) for example, maintains that ambitions are largely the products of careers and past attainments, and reflect the realistic opportunities that are available to school leavers, at least in Britain (see also Kerckhoff, 1976). Roberts continues (1968:179) to say that

> the momentum and direction of school-leavers' careers are derived from the way in which their job opportunities become cumulatively structured and young people are placed in varying degrees of social proximity, with different ease of access to different types of employment. The ambitions of school leavers adapt to the direction that their careers take, and are not major determinants of the occupations that young people enter (emphasis added).

This perspective explicitly recognizes the potential importance of sorting, allocating, and constraining social forces for the initial attainments and ambitions of young adults. Students' expressed aspirations likely become much more reality-oriented over time as important transitions are approached and actual prospects for success become more clear (Alexander and Cook, 1979; Kerckhoff, 1976). This greater realism likely derives as much from accurate perceptions of opportunities as it does from self-appraisal of interests and abilities, the latter having been the exclusive concern in the developmental literature.

The notion of "stages" implicit in the socioeconomic life-cycle thus involves more social time-tables and role transitions than maturation. Neugarten and Datan (1973:54) stress the fact that developmental perspectives which focus upon strictly biological, maturational, and life stage conceptions of the career decision-making process are omitting a crucial concept "social time" -- "the system of age grading and age expectations that shapes the life cycle" (see also Elder, 1975). "There exists what might be called a prescriptive timetable for the ordering of major life events" (Neugarten, Moore, and Lowe, 1965:711) which demands that individuals make certain decisions within certain "time zones" (Atchley, 1975:273). The structure of the major adolescent socialization institution -- the school-- imposes a rigid time schedule upon its charges. There is a time to pass from junior to senior high school, to pick a curriculum, to leave secondary school and pursue either higher education or a vocational career. These decisions are made or actions are taken when the dictated time arrives regardless of whether they are determined by interests or imposed from without. There are, thus, "turning points" built into the adolescent's experiences, "points at which the individual ceases to be one thing and becomes something else; and many turning points are mandated by age norms" (Atchley, 1975:275). At each turning point, certain age-linked opportunities open up, and, as Clausen suggests (1972:463), the presence or absence of these opportunities is often related to such ascribed and fortuitous factors as sex, race, socioeconomic background, and personal contacts. These four specific factors thus can operate either to "socialize" the individual into appropriate or realistically attainable occupational directions or to directly "channel" the individual into an occupation regardless of personal interests. Hence, the sorts of socializing and allocating factors that have been studied extensively by sociologists may well limit the individual's ability to locate an occupational environment suited to his talents, interests and personality.

It is important to recognize that these various "turning points" are socially defined and structurally imposed, rather than solely, or even mainly, "maturational outcomes," and that the points correspond to critical stages in the socioeconomic life-cycle (see Jordaan, 1974:278-85 for examples which make this correspondence clear). The anticipated outcomes of the Exploratory stage -- or outcomes of the Crystallization, Specification, and early Implementation developmental tasks -- need not be viewed as developmentally or maturationally pre-determined. They can equally well be conceived of as structurally induced or forced to occur regardless of prior thought processes and exploratory behavior. The adolescent, at about age 14, is typically in the ninth grade, her final year of junior high school. The next year marks a transition to senior high school, necessitating actions such as course selection, curriculum selection, and formation of new peer groups. In the twelfth grade she (at about age 18) will be forced by the imminence of graduation to contemplate her future or, at the very least, to make decisions or choices which will affect her future. She will have to apply to a college in order to continue her education (and be sorted or selected into an adequate or unacceptable group of applicants), or arrange to gain an entry job if she fails to either apply to or be accepted by a college. Depending upon the individual's sex and the historical situation, this decision may be removed from her control and a period of military service might follow. If she does continue her education, job entry will be postponed for from two to four years, possibly longer. Each of these transition periods offers new opportunities and forecloses others, results in different sets of age-graded expectations for her behavior, and different sets of criteria against which her achievements will be measured.

Outcomes, viewed in this manner, are successively determined and necessarily forthcoming from the individual, irrespective of his vocational maturity or prior preparation for the imposed decision. Determination of the relative importance for occupational preferences and attainments of interests, values and personality as opposed to background, demographic and allocative mechanisms would be a valuable first step in combining sociological and psychological perspectives on career development. This is one objective of the present study.

1.2 OCCUPATIONS, OCCUPATIONAL PREFERENCES AND INTERESTS

In this project we shall consider several important aspects of career development over the primary and secondary grades and how these affect occupational placement and experiences in the first few years after high school graduation. As "in-school" concerns, we examine career planning, career plans, work experience, curriculum placement and educational attainment. A recurrent objective throughout these analyses will be to discern whether students' "interests" appreciably affect such career preparatory outcomes while in school and whether they affect actual work experiences later. But what aspects of "interest" should be considered in this regard? Sociologists often study interest in occupational status and less often earnings, but this may be unduly narrow. The sociological preoccupation with these few tangible dimensions of occupational reward may simply be misplaced. No doubt they are important, but are they as singularly important as this neglect of other aspects of occupational functioning and reward seems to suggest? Certainly other possibilities abound, and we next review how some recent ideas regarding the nature of occupations might inform our thinking about occupationally-relevant interests.

Lofquist and Dawis (1969:10) correctly note that "work" is many things to many individuals:

> Work is the means of maintaining a certain standard of living, a certain level of existance, and also of achieving some higher level or standard. Work is something to do, a way of filling the day or passing the time. Work is a source of self-respect, a way of achieving recognition or respect from others. Work defines one's identity, one's role in the society of which he is a part. Work

> provides the opportunity for association with others, for building friendships. Work allows for self-expression, provides the opportunity for creativity, for new experiences. Finally, work permits one to be of service to others.

Implicitly or explicitly, conceptual definitions of "occupation" include assumptions concerning which of the many meanings of "work" are particularly salient. However, as Lofquist and Dawis (1969:19-20) note, "we must become able to describe occupations more completely and in terms that relate to the individual and his work-relevant problems" (emphasis added). Such a recognition suggests that more than one single conceptualization of "occupation" may be necessary in order to understand and predict occupational preferences and attainments.[1]

Wise, Charner, and Randour (1976) have provided a discussion of the concept of "work" which emphasizes its diverse characteristics. They conceptualize "work," following Temme (1975), as having three dimensions: requisites, routines, and returns. Specifically, occupations have both general educational and particular skill requisites; their routines can be classified by both context and function; and there are numerous returns to (or rewards of) work -- earnings, prestige, power, autonomy, associations, satisfaction, and social benefit which accrue to the individual due to occupational performance or incumbency. An "occupational preference," then, is a preference for the entire constellation of characteristics -- requisites, routines, and returns -- that constitute that occupation (Wise, Charner, and Randour, 1976:16-17).

Vocational psychologists have concentrated upon the "matching of the person and the environment," the individuals' needs and abilities, and the occupational requisites and routines. Roe (1956), for example, focuses on how occupational routines may satisfy psychological needs of the individual. Jobs thus are arrayed along need dimensions. Holland's (1959; 1966; 1973) classification scheme is similarly based on a "person-environment fit" model, where interests (focused mainly on the routines of work), deriving from the interaction of needs and abilities, are used to predict occupational choice.[2]

While this literature on person-environment fit has tended to concentrate on the gratification potential of work routines, sociologists have dealt mainly with the more extrinsic aspects of occupational reward, mainly earnings or status/prestige. In fact, until recently,[3] these are practically the only career outcomes to have received sociological attention.

A procedure for assessing the benefits derived from work developed by psychologists at the University of Minnesota may prove useful in considering simultaneously all of these various notions about what may be important to the worker in the work situation. Their Minnesota Importance Questionnaire (1967 revision; see Lofquist and Dawis, 1969: Appendix) begins with the following introduction: "The purpose of this questionnaire is to find out what you consider important in your ideal job, the kind of job you would most like to have" (emphases in the original). The individual is then presented with 190 pairs of statements formed from 20 sentences tapping all the dimensions of work identified by Wise, Charner, and Randour (1976). The individual is forced to choose the more important statement in each pair and then, at the conclusion of the questionnaire, is asked to indicate whether each of the 20 statements is an important or an unimportant consideration with respect to his ideal job. Such an instrument could be used to classify work experiences along returns dimensions of occupations in the same manner as the Roe (1956) and Holland (1959; 1966; 1973) classifications construct typologies along the routines dimension of work. The present study does precisely this, classifying both work rewards and routines from self-reported job attributes.

These varied conceptualizations of "occupation" suggest quite different predictors of occupational preferences, choices, and attainments. "Interests" are crucial to the vocational psychology orientation. Much of the work in this literature has centered on "tested" or "inventoried" (Osipow, 1973: 307-9) interests.[4] However, a growing body of research and speculation suggests that "manifest" (Osipow, 1973:307-9) interests are equally if not more important determinants of occupational preferences. Lofquist and Dawis (1969:24-36) suggest that a fruitful way of assessing the individual's ability-need relationship is through his "exhibited interest" pattern -- the discretionary activities in which the individual participates. Krumboltz (1975:22-3) concludes that preferences for activities in occupations are the most significant preferences: "A person's career consists of not merely a particular job but rather of a set of occupational activities in which he engages and through which he seeks progressively to reach his life goals" (McLaughlin and Tiedeman, 1974:177-78). Preferences, it is assumed, can be deduced from adolescent activity -- "manifest interests."

Manifest interests involve exploratory behaviors (Osipow, 1975:4) which allow the individual to determine the fit between them and his abilities and self-concept. Jordaan (1974:273) expresses well the utility of this exploratory behavior:

> The individual engages in a wide variety of activities, sometimes of his own accord, sometimes only because it is demanded or expected of him. These include school subjects, part-time and summer jobs, hobbies and pastimes, and home, school, and neighborhood activities. Whether freely chosen, prescribed, or expected, they enable the individual to try himself out in a variety of roles and activities, and to become better acquainted with social expectations and demands and with environmental opportunities and barriers.

Sociologists conceptualize these manifest interests as activities that serve socialization functions, provide access to role models, and give the adolescent feed-back concerning his abilities. Blau and his colleagues (1956) remind us that adolescents' preferences reflect both the valuation of the rewards deriving from an occupation and an appraisal of the likelihood of obtaining such a position. Participation enables the individual to appraise this potential in terms of (as Jordaan, 1974, was seen to note) "social expectations and demands and....environmental opportunities and barriers." Adolescent employment, participation in sports, clubs, and school programs have been employed in the status attainment literature (Otto, 1976; Kerckhoff, 1974a; Hauser, 1972; Spady, 1970) as predictors of adolescent goals and eventual attainments. Their effects on aspirations reflecting the prestige and economic returns to occupations have been less pervasive than that attributed to them in the vocational psychology literature, but nonetheless notable.

In summary, the conceptualizations of "occupation" are central to one's choice of explanatory variables regarding the emergence of occupational preferences and their pursuit in the labor market. Since both intrinsic and extrinsic rewards (i.e., those deriving from the routines of and the returns to work, respectively) of occupations (Osipow, 1975:8) are sought and aspired to by adolescents, multiple conceptualizations/operationalizations of preferences and interests are required to capture these complexities. Prediger (1975:4), for example, suggests that interests may be more predictive of type of work desired, but extrinsic considerations may be more effective in predicting actual attainments (but see Featherman, 1972; 1971).

In this project we evaluate the significance of manifest interests for career development during the school years and for early occupational placement by classifying students' reports of their leisure-time activities during the seventh, ninth and eleventh grades into the six interest domains implied by Holland's classification of personality types and work environments. We also employ a conceptually parallel organization of the work routines involved in the respondent's job three years out of high school. Thus, we can consider not only how adolescent interests relate to primary and secondary grade career development outcomes, such as career planning and plans (often employed as indicators of vocational maturity -- see Super and Overstreet, 1960; Gribbons and Lohnes, 1968; Jordaan and Heyde, 1979) and educational attainments, but also the extent to which they anticipate both the kinds of activities these youth will engage in early in their work histories and the sorts of occupational rewards they will realize. Although many of the specific concepts and measures employed in this research are more common to the vocational psychology literature and much of the theory informing this undertaking has its origins in that tradition, these concerns are pursued within the general framework of the socioeconomic life-cycle. By merging perspectives in this way we hope not only to further our understanding of the immediate substantive issues, but also, as a more general objective, to suggest some serious omissions in sociological thinking and research on the determinants and dimensions of occupational attainment.

1.3 THE GENERAL FRAMEWORK FOR THE PRESENT STUDY

To organize these concerns we distinguish three sets of factors which are relevant to all phases of the career process: 1) current career outcomes; 2) mediating influences which operate upon these factors as either socialization or allocation mechanisms; and 3) prior outcomes from an earlier phase. The ways in which these factors might be presumed to operate upon one another, both cross-sectionally and longitudinally, in the career development process are portrayed in Figure 1.3.1, which will serve to structure both the discussion which follows as well as the research to be reported later. To simplify a necessarily complex exposition, we employ heuristic categorizations of "key" variables. Thus, we distinguish between the following sets of outcomes: a) Activities; b) Plans; and c) Skills. Additionally, two groups of pre-determined and mediating factors are considered: a) Demographic and Background Characteristics of the individual; b) Socialization Influences of peers, family, and school.

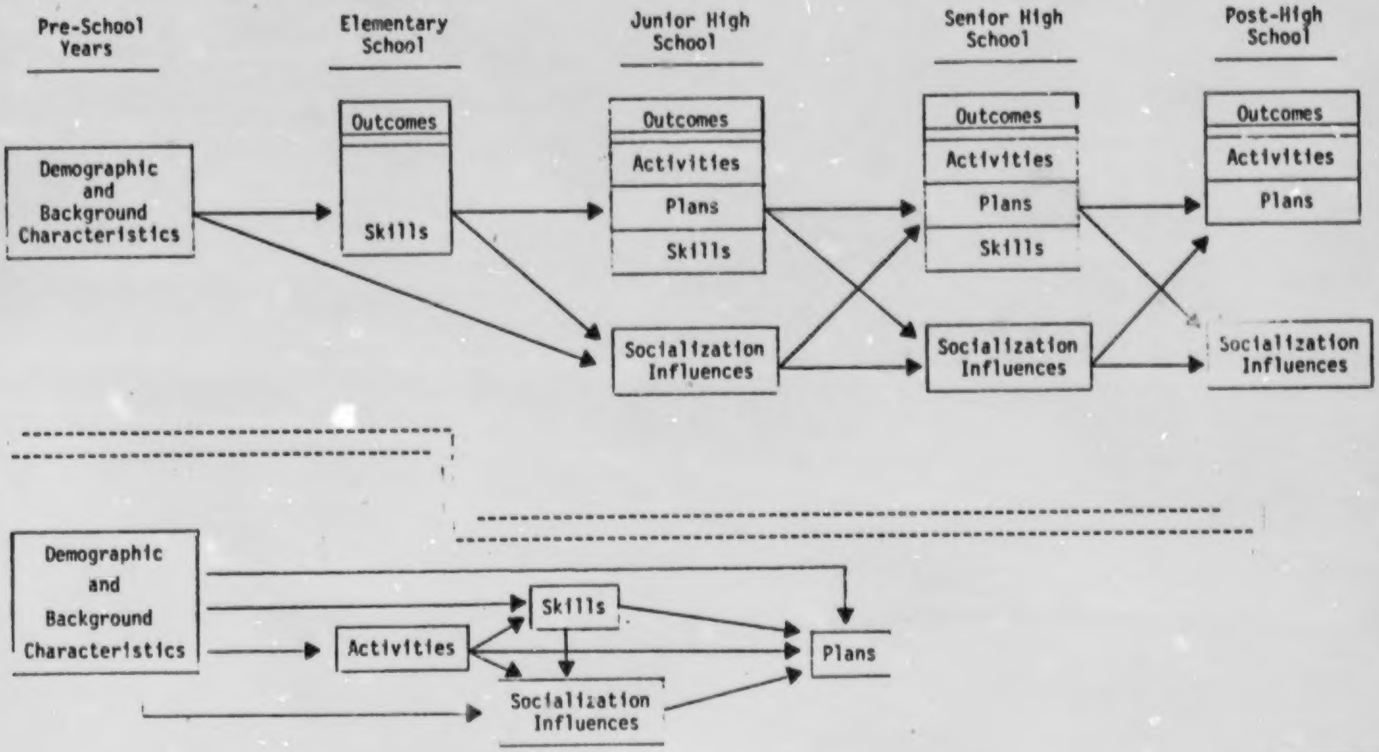
The longitudinal nature of career development processes is reflected in the Figure through the temporal ordering of various educational transitions, which also correspond closely to the age-defined developmental stages from the psychological literature. The variables listed vertically within each phase (i.e., level of schooling or its counterpart developmental stage) can themselves be organized according to their presumed causal relevance to career outcomes. As depicted in the Inset to Figure 1.3.1, ascribed characteristics are seen as influencing all career outcomes as well as the nature of one's socialization experiences. Participation in activities contributes to the development of skills, affects plans for the future and contributes to significant others' perceptions of one's interests, capabilities, etc. These demonstrated skills, in turn, also affect the evaluations given by and interactions with significant others, as well as one's orientations to the future. Finally, the social supports received from significant others might bear upon career plans and preferences. We next review in somewhat greater detail the various components of the framework diagrammed in Figure 1.3.1, and then conclude this section with a brief assessment of the informative value of the proposed approach to the study of the career development process.

1.3.A. Career Outcomes

1.3.A.1. Activities

Various decisions must be made at the junior high, senior high, and post-high school transition periods; or, rather, various decisions are made, and certain actions taken. For the present, we presume no particular degree of forethought for these activities (i.e., they may be rational decisions, choices, or simply things that happen without any consideration at all; see Tiedeman and Miller-Tiedeman, 1975), nor that these activities and decisions are developmentally determined. Rather, we need merely recognize that certain

Figure 1.3.1 Schematic Representation of the Cross-Sectional and Longitudinal Nature of the Career Development Process in Adolescence and Yount Adulthood


Pre-School Years
Elementary School
Junior High School
Senior High School
Post-High School
Demographic and Background Characteristics
Outcomes
Skills
Outcomes
Activities
Plans
Skills
Outcomes
Activities
Plans
Skills
Outcomes
Activities
Plans
Socialization Influences
Socialization Influences
Socialization Influences
Demographic and Background Characteristics
Skills
Activities
Plans
Socialization Influences

things do occur, indeed are sometimes forced to occur, at each of the stages in the adolescent's school career. Table 1.3.1 lists activity outcomes which are relevant at each of the transition periods suggested in Figure 1.3.1. These will be considered in the present study. Many of these activities reflect pre-vocational interests, and as such play an integral role in the decision-making process. Analyses will consider questions such as the following: which activities most strongly influence later career development and limit later alternatives; what characteristics distinguish individuals who do or do not exhibit these behaviors or display these manifest interests; when, in fact, are these activities first undertaken; and, how well can we predict both their occurrence and their nature?

1.3.A.2. Plans

A variety of subjective constructs -- values, goal-orientations, preferences, and so forth -- are integral to the developmental and socialization perspectives on career development. For convenient reference, we subsume this congery of intrapersonal variables under the general heading "plans," since, in our usage, most pertain to future-oriented perceptions, expectations, or outcome preferences.[5]

Tiedeman (1961) suggests that the adolescent, in order to successfully plan a career, must be able to relate present behaviors to the future and to future outcomes, that is, must evidence "future-time orientation." The individual must recognize the need to begin to crystallize his thoughts about his future into a coherent strategy, must begin to plan for future educational

Table 1.3.1 Outcomes of the Career Process through Young Adulthood

Activities	Plans	Skills
(Junior & Senior High)	(Junior High School Only)	(Junior & Senior High)
Gains work experience	Plans for a high school curriculum	Evidences communication skills (i.e., reading, listening; writing skills)
Participates in school organizations and events	(Junior & Senior High)	
Pursues out-of-school interests	Plans for college	Evidences academic skills or knowledge (e.g., of/in social studies, science, mathematics)
(Senior High School)	Recognizes the necessity of planning for future educational and vocational attainments	(Post-Secondary School)
Enrolls in a given curriculum		Gains job skills
Applies to an institution of higher learning	Attempts to plan for future educational and vocational attainments through discussion with other persons	Expands academic skills
(Post-Secondary School)	(Senior High School Only)	
Enrolls in an institution of higher learning	Plans to enroll in college	
Engages in outside activities or interests not connected with the school or the occupation	Plans to enter the labor force	
	Plans for occupational entry	
Seeks to enter the labor force: (a) enters the labor force; (b) performs a given set of work activities	(Post-Secondary School)	
	Formulates work values	

and occupational attainments, and must attempt to articulate these plans and thoughts in interactions with significant others. The preliminary attempts to organize and plan for one's future constitute "crystallization" and "specification" developmental tasks. The successful completion of these tasks, however, is not inevitable. In fact, quite to the contrary, their very occurrence requires explanation, since they can hardly be considered "developmentally predetermined" (Jordaan, 1974:286).

The "plans" to be considered in the present study of career decision-making processes are presented in Table 1.3.1. These involve future-oriented thoughts and relevant discussions with significant others (i.e., parents, teachers, counselors, peers). For some of these factors, the particular substance of the plans is important (e.g., plans to enter the military rather than continue one's education; plans to enter a college preparatory rather than a vocational curriculum in high school). For others, merely recognizing the issue as requiring thought may be most critical (e.g., thinking seriously about one's vocational career as early as the seventh grade). Questions of the following sort can be asked regarding these aspects of the planning process: What distinguishes future-oriented individuals from those who do not actively plan for future activities; At what periods do various groups of individuals actually begin to plan for the future; What is the importance of planning itself, irrespective of the content of the plans; What is the importance of the content; What distinguishes those individuals who discuss their futures with parents and/or peers from those who discuss them with teachers and counselors, and what is the relative importance of these various significant others for career outcomes?

1.3.A.3. Skills

The diverse abilities and history of prior academic achievement with which an individual enters the junior and senior high school years contribute substantially to her academic performance and the likelihood of her benefiting from various educational experiences and opportunities (e.g., enrolling in a college preparatory curriculum, receiving encouragement for college plans from significant others, and so forth). Additionally, the individual accumulates knowledge, skills, and academic credentials throughout these later educational years which then contribute to her post-educational career prospects. Indeed, the "requisites" of work, which are often satisfied through demonstrated performance in school or academic credentials, have been identified as one of the defining attributes of occupations (Temme, 1975). Throughout her educational career, then, the individual is accumulating competencies, interests, and work-habits which will largely determine her ability to satisfy the requisites and perform the routines of particular jobs.

Some skill-outcomes of importance to career development are suggested in Table 1.3.1. How important are these abilities and achievements for later occupational placement? How do they structure the individual's occupational preferences and values and his educational goals? Are these requisites euqally important for everyone or do, for example, blacks and women not aspire to the same occupational activities as do white males despite having the same skill and knowledge levels? If not, why? What is the relative importance of plans, activities, and abilities for occupational preferences and educational and occupational attainments, and how important are these personal attributes relative to background characteristics and environmental conditions? These, and numerous related questions, bear upon the skills component of career development processes.

1.3.B. Mediating Influences

1.3.B.1. Demographic and Background Characteristics

Throughout the career development process the individual carries with him a given set of ascribed characteristics which serve to inhibit or facilitate entrance to and aspiration for particular occupational and educational attainments as an adult. The importance in the career development process of these factors must be properly understood if counseling and intervention attempts are to be effective. To the degree that these characteristics serve to limit a person's actual options and do not limit his goals, frustration and disenchantment are likely to result. To the degree that they constrict an individual's goals and only in that manner limit attainment, counselees may benefit from information concerning the occupational structure and instruction in career decision making skills. Additionally, the importance of activities, plans, and abilities for various career development outcomes in these processes may differ markedly across sex and race groups. Do males, for example, more readily convert encouragement into aspirations than do females? Are females' aspirations more dependent on socioeconomic background characteristics and those of males on abilities and interests? Are blacks' aspirations responsive to different sets of influences than are whites'? To operate on or intervene in the career process without a thorough understanding of how this process might differ for various subgroups defined by ascribed characteristics is to invite error and waste. The background characteristics to be considered in our analyses are presented in Table 1.3.2.

1.3.B.2. Socialization Influences

Both developmental psychologists and sociologists recognize the importance of role models and significant others for the structuring and implementation of occupational and educational goals. Both perspectives recognize that individuals develop in a particular social milieu and network, and that various features of these social settings, both proximate and distal, affect the adolescent's tentative choices and the resources available for their pursuit. The interpersonal supports provided by key reference groups and particular "significant others" including parents, peers, teachers, and counselors, are thought to be especially important in this regard. Of course, these various significant others may not evaluate the adolescent's abilities and interests in the same way that he himself does, and it is important to identify the actual importance of these differing assessments independently of the individual's own objective abilities and subjective interests. It is also important to determine whether indeed these differing sources of encouragement are similarly important for adolescents of both sexes and various racial groups.

The sociological as well as the psychological literature suggests that socialization into accepted sex/race achievement patterns

Table 1.3.2 Pre-Determined and Mediating Influences in the Career Process

Demographic and Background Characterictics	Socialization Influences
Socioeconomic position of family of origin	Parental press for educational attainment
Race	Perceived orientation of peers to post-secondary educational attainment
Sex	
Ability	Extent of communication about vocational and educational plans with parents, peers, teachers, and counselors.

occurs very early in life, and that these influences continue to be felt throughout the early stages of the socioeconomic life-cycle. Girls are not encouraged to the same degree as are boys to aspire to higher educational attainments or to occupational positions which have traditionally been predominantly male. Abilities and interests are less influential in the formation of educational aspirations by females than is the case for male adolescents, a circumstance which likely derives, at least in part, from early socialization experiences and pressures from significant others regarding the acceptable range of female aspirations. As a consequence of these early experiences, females may appear to take a less active part in their own career development and their interactions with significant others may be more critical for career preferences and attainments, two important respects in which career development processes for males and females may differ. To what extent do significant others actually affect career decisions, and do they do so differently for blacks and whites, males and females? When do these forces exert their greatest impact on the individual's development? Are, for example, parental resources and social supports more effective at earlier or later stages of the early career process? Does the relative importance of different types of significant others (parents, peers, teachers, counselors) change throughout the process? And if so, at what points are their respective impacts at a maximum? What factors most strongly affect the support provided by significant others and how important are these social factors relative to other sets of variables in the formation of goals? Table 1.3.2 lists some of the socialization influences which we will consider in informing these questions.

1.3.C. The Cumulative Impact of Prior Outcomes

It is important to remember that prior outcomes serve to restrict the range of available options for activities, cognitions, and skills at later points in the career development process. These past outcomes also have an influence on the evaluations given by significant others, as well as upon the self-assessments and the developing image of self held by the adolescent. It is because of this cumulative, and to some extent irreversible, nature of the process that it is crucial to have multiple data collection points during the formative years or early stages of the adolescent's career development activity. Prior knowledge gained, curriculum plans made, and thought or lack thereof given to future employment while in junior high school will all have consequences for outcomes in senior high school. Activities engaged in will affect future preferences which will in turn affect future activities. The career outcomes of the senior and post-high school years are here conceived of as being determined in part by the demographic and background characteristics of the student, interpersonal influences, and also in part by the prior activities, plans, and skills of the individual. As indicated by Figure 1.3.1, the general model which has informed our discussion explicitly incorporates these cumulative influences.

1.3.D. General Research Objectives

In view of the complexity of the above discussion and of this project's substantive concerns, an exhaustive listing of possible research hypotheses would be impractical. Many of the research issues and propositions have already been alluded to in the above discussion. In concluding this introductory chapter we therefore think it more useful to review some of the general themes that will be the backdrop for the analyses that follow rather than to dwell upon expectations regarding particular relationships.

We are interested in career development processes and outcomes over the primary and secondary grades and how these affect early work experiences. Drawing upon insights from both sociology and vocational psychology, we recognize the multi-faceted nature of work and hence that aspects of in-school career development may be differentially salient depending on which dimensions of work and of work experience are of immediate concern. The present project casts a rather wide net in touching upon many of these "aspects" and "dimensions." We consider both the routines and rewards of early work experience, and a reasonably broad range of possibilities within each. Of interest are both the correspondence between these dimensions of occupational organization and their responsiveness (in terms of occupational placement) to earlier, in-school career preparatory outcomes and processes. In terms of the latter, we examine school attainments, curriculum placement, social supports and interpersonal influences, goals for the future (both educational and occupational), the extent to which the respondent is engaged in planning (i.e., evidences future orientation vis-a-vis continuing education and career goals), and pre-occupational, or manifest, interests (i.e., patterns of discretionary time utilization). In addition to their consequences for actual work experience, we also investigate how these in-school work preparatory and career development factors emerge and influence one another over the primary and secondary grades.

Investigation of the complex issues discussed in this and previous sections requires an unusually rich data base, one that is longitudinal, that includes data on aspirations, interests, abilities, interpersonal relations and attainments, and that covers the crucial transition periods in the adolescent's career development. The data to be employed in the present research satisfy these requirements. Collected for the Study of Academic Prediction and Growth (Educational Testing Service, Princeton) between 1961 and 1969 (see Chapter 2, below), they will allow us to examine not only the determinants of outcomes occurring at one stage of the career development of adolescents, but also the mechanisms by which past attainments are translated into future ones at several later stages in the adolescent's junior, senior, and post-high school development. Indeed, by tracing longitudinally the complex relations among these various personal, familial, and structural factors, the present analysis will, it is hoped, contribute substantially to our understanding of school-based career development processes and how these affect work experiences and outcomes in the first few years of employment after high school.

FOOTNOTES

[1] Here, and throughout this discussion, we employ the phrase "conceptualization of occupation" to mean "concentration upon only one of the dimensions of occupation, the dimension most salient in a particular body of literature."

[2] In one sense, psychological need-reduction is a "reward" accruing from work. However, throughout this discussion we consider need-reduction as an intrinsic reward, intrinsic to and deriving from the occupational routines. Occupational returns are extrinsic rewards (e.g., prestige, earnings, power) which result from satisfactory performance in the routines or from role incumbency. These distinctions are implicit in the literature and allow separation of the traditional concerns of psychologists with the routines of work from the interest of sociologists in the material and symbolic returns to work. Thus, we exclude "the need for power," or "the need for money" from motivations subsumed under the need-reduction theory of occupational choice. "Need-reduction," then, refers to the satisfaction of intrinsic rather than extrinsic needs.

[3] It should be noted that some recent sociological research in the area of status attainment has examined "work satisfaction" as an adult outcome to be explained by the traditional array of background and attainment variables, reflecting recognition of non-economic and non-prestige returns to work. See, for example, Otto (1976), Otto and Featherman (1975), Kalleberg (1974), and Jencks, et al. (1972).

[4] See, for example, the "Kuder Preference Record" (see Hornaday and Kuder, 1961), Holland's (1958) "Vocational Preference Inventory," and the "Strong Vocational Interest Blank" (Strong, 1943).

[5] Our use of the concept "plans" corresponds to that employed by Miller, et al. (1960:17). A "plan" is a "rough sketch of some course of action," a general goal implicitly incorporating rudimentary strategies for implementation. See also Mischel (1973:273-75).

Chapter 2 -- The Sample

2.1 THE STUDY OF ACADEMIC PREDICTION AND GROWTH

Seventeen communities in the United States participated in the Academic Growth Study conducted between 1961 and 1969 by the Educational Testing Service, Princeton, New Jersey. The communities were purposively selected to vary on geographic location, school system size, and proportion of the community's high school graduates continuing on to higher education. Table 2.1.1 (adapted from Hilton, 1971: 11, Figure 2) presents the school system characteristics of the seventeen communities included in the study.

The initial Growth Study student sample, first surveyed in 1961, consisted of eleventh and twelfth graders in all 27 high schools in these 17 communities, plus fifth, seventh and ninth graders in their elementary and junior high feeder schools. Students in these schools were surveyed and/or tested every two years during the period 1961-1969 until graduation from high school. Figure 2.1.1 presents the dual cross-sectional and longitudinal nature of the study design (adapted from Hilton, 1971: 10, Figure 1; see Chapter 3, below, for an explanation of the instruments administered in each wave of data collection). For example, in 1961 the fifth graders in the elementary feeder schools to the 27 high schools were tested. In 1963 all students in the seventh grade classes in these same communities were contacted. Thus, in 1963 data were collected on those students who had participated in 1961 as fifth graders if they had neither been retained a grade nor withdrawn from the school system. Additionally, those students who had entered the school system since 1961 or had for

Table 2.1.1 Distribution of High Schools in Study of Academic Prediction and Growth as of 1969[e]

U.S. REGION	12th Grade Enrollment						
	Over 200			100-200		Under 100	
	Percent College Going			Percent College Going		Percent College Going	
	Under 35	35-70	Over 70	35-70	Under 35	35-70	Over 70
New England Middle Atlantic	2	2	---	---[a]	1	1	1
E.N. Central W.N. Central	2	1	2[b]	1	1	1	1
W.S. Central S. Atlantic E.S. Central	1[d]	---	1[d]	1	1	1[d]	---[c]
Mountain Pacific	1	---	2	1	1	1	---
No. of Schools	6	3	5	3	4	4	2

---

[a] 1 school dropped out in 1962.

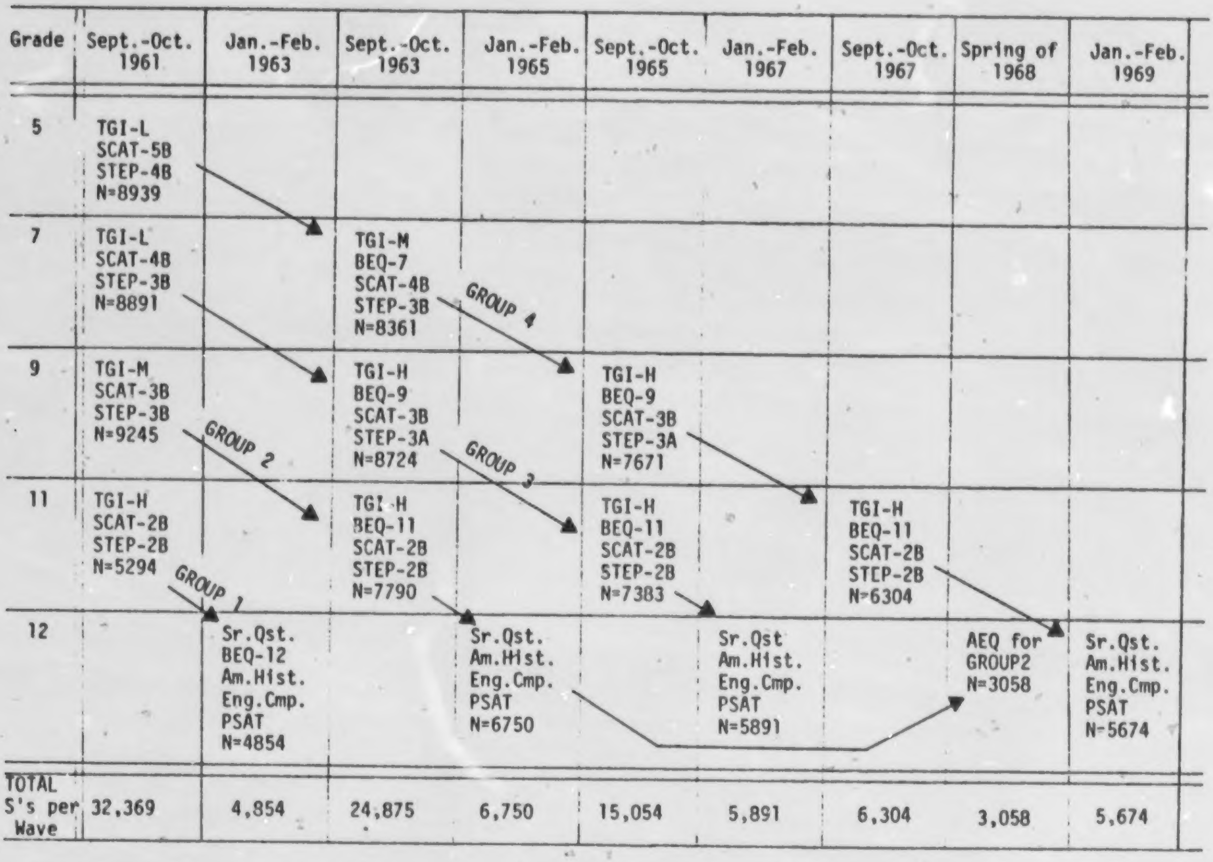
[b] 1 of these 2 was established in 1963.

[c] 1 school dropped out in 1963.

[d] Schools excluded from the transcript coding task.

[e] Table adapted from Hilton (1971: 11, Figure 2).

Figure 2.1.1 The ETS Testing Plan for the Study of Academic Prediction and Growth[a]



Grade	Sept.-Oct. 1961	Jan.-Feb. 1963	Sept.-Oct. 1963	Jan.-Feb. 1965	Sept.-Oct. 1965	Jan.-Feb. 1967	Sept.-Oct. 1967	Spring of 1968	Jan.-Feb. 1969
5	TGI-L SCAT-5B STEP-4B N=8939								
7	TGI-L SCAT-4B STEP-3B N=8891		TGI-M BEQ-7 SCAT-4B STEP-3B N=8361						
9	TGI-M SCAT-3B STEP-3B N=9245		TGI-H BEQ-9 SCAT-3B STEP-3A N=8724		TGI-H BEQ-9 SCAT-3B STEP-3A N=7671				
11	TGI-H SCAT-2B STEP-2B N=5294		TGI-H BEQ-11 SCAT-2B STEP-2B N=7790		TGI-H BEQ-11 SCAT-2B STEP-2B N=7383		TGI-H BEQ-11 SCAT-2B STEP-2B N=6304		
12		Sr.Qst. BEQ-12 Am.Hist. Eng.Cmp. PSAT N=4854		Sr.Qst. Am.Hist. Eng.Cmp. PSAT N=6750		Sr.Qst Am.Hist. Eng.Cmp. PSAT N=5891		AEQ for GROUP2 N=3058	Sr.Qst. Am.Hist. Eng.Cmp. PSAT N=5674
TOTAL S's per Wave	32,369	4,854	24,875	6,750	15,054	5,891	6,304	3,058	5,674

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[a] Taken from Hilton (1971: 10, Figure 1). The number of S's for 1965-1969 are estimates. Totals combine both public and independent school counts.

other reasons not been included in the initial 1961 data collection also were contacted. The longitudinal sample size spanning any period of years is thus limited by the size of the smallest cross-section included in that period. The actual size of any such longitudinal sample is, of course, determined by individual student loss due to transfer, irregular progression through school, absence from any wave of data collection, instrument incompleteness, and so forth.

In the spring of 1968, a follow-up study (Hilton, 1971) was launched to contact selected groups of students who had graduated from the school system approximately one and three years prior to 1968. Specifically, questionnaires were mailed to all June, 1967, graduates from the high schools in all 17 communities (GROUP 3, see Figure 2.1.1). A 76 percent return rate (5,542) was obtained (Hilton, 1971: 146). At the same time, questionnaires were mailed to all June, 1965, graduates (GROUP 2) from high schools in two large cities included in the Growth Study (communities 12 and 44, see below). Seventy-two percent of these graduates (3,058) responded (Hilton, 1971: G-1).

In the fall of 1976, The Center for Social Organization of Schools, The Johns Hopkins University, was funded by the National Institute of Education to supplement these ETS data in several respects (see below) and to conduct secondary analyses on them. This report is based on the consolidated data and employs subsamples of the following two master groups: the 14,708 students from the GROUP 4 (see Figure 2.1.1) cross-sectional waves (subsets of whom constitute panels of varying duration); the 2,236 students who participated in the 1968 follow-up of 1965 seniors and whose ID's could be linked with previous GROUP 2 phases (see Figure 2.1.1 -- some students picked up in the post-high school follow-up apparently had not participated in other stages of the project. These students were dropped from all later analyses).

Although the purpose of this chapter is to discuss the project design and various sample characteristics, in order to do so properly we must touch upon several problems involving instrumentation and data availability which complicate work with these data (variable measurement and instrumentation are discussed in detail in Part II of this report). The ETS Growth study is unusually rich in data and comprehensive in its coverage of the primary and secondary grades, yet not all sources of information are available for all students and not all schools and communities were included in all of the project's phases. To provide a better sense of these complexities and limitations, we next review some of the more important considerations regarding school selection for the post-high school surveys, restrictions on the availability of racial identifiers and problems with the information on occupational aspirations. These data considerations are pertinent in the context of the present discussion because they limit the individual respondents and subsamples available for analysis.

Table 2.1.2 summarizes the data that are available for the GROUP 4 students and the GROUP 2 panel (hereafter called the AEQ or AEQGP2 for "Adult Experiences Questionnaire," a subset of the GROUP 2 sample). An asterisk marks data available only for GROUP 4 students, a double asterisk marks data available for both groups, a triple asterisk those data only available for the AEQ panel. ETS collected and coded the STEP, SCAT, PSAT, CEEB, TGI, and BEQ data from the students (see Chapter 3 for explanations of these instruments). The information from the Senior Questionnaire was collected by ETS and most of it was coded by them, as were the data from the AEQ instrument. Rank in class

Table 2.1.2 Summary of Data Available

LEVEL	VARIABLES	INSTRUMENTS
Grade 5	Aptitude and Achievement	SCAT*, STEP*, TGI*
Grade 7	Aptitude and Achievement	SCAT*, STEP*, TGI*
	Experiences, aspirations, interests, family background	BEQ-7*
Grade 9	Aptitude and Achievement	SCAT**, STEP**, TGI**
	Experiences, aspirations, interests, curriculum, & family background	BEQ-9*
Grade 11	Aptitude and Achievement	SCAT**, STEP**, TGI**
	Experiences, aspirations, interests, curriculum, & family background	BEQ-11**
Grade 12	Aptitude and Achievement	PSAT**, CEEB Tests**
	Complete High School Record	Transcripts*
	Educational plans (for a few students, vocational plans)	Senior Questionnaire**
Summer after high school graduation	Rank in Class	Roster to School**
3 years after high school graduation	Aspects of vocational and educational attainment, interests, experiences	AEQ (Adult Experiences Questionnaire)***

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*Available only for the GROUP 4 students, graduates in 1969.

**Available for both the GROUP 4 students and the AEQ-GROUP 2 follow-up sample.

***Available only for the AEQ-GROUP 2 students, graduates in 1965.

was obtained by ETS from school rosters for most schools, although several (including two very large ones) did not compute ranks for their graduates.

Race of the student is a crucial control variable in our analyses. Unfortunately, we discovered that racial information was supplied by ETS on students in only three large urban communities in the GROUP 4 1967 cross-section (eleventh grade). Therefore, we had to either do without racial controls in analyses involving students from the other GROUP 4 communities and the GROUP 2 respondents or somehow obtain more racial information. Fortunately, transcripts of the high school records of many GROUP 4 seniors provided the means for supplementing racial codes. These were already in the possession of ETS, but data from them had never been incorporated into the data files for individual students. Using these transcripts, student rosters supplied by ETS, and 1969 high school yearbooks obtained by the Hopkins staff for most of the schools in the Growth Study, race codes were able to be assigned to all students in GROUP 4 for whom transcripts were available. No transcripts were available for GROUP 2 students, but we were able to assign race codes for the AEQ follow-up respondents from 1965 High School yearbooks (their senior year).[1] Thus, the presence or absence of racial identifiers in the GROUP 4 and the AEQ data is an important factor in limiting the sample of respondents available for analysis. These and related data/sample issues are discussed next for each group separately.

2.2 THE GROUP 4 LONGITUDINAL PANEL

2.2.A. The Core GROUP 4 Sample

The size of the usable GROUP 4 panel sample was very much influenced by the complications surrounding racial identifiers just mentioned. Racial data

Table 2.2.1 Estimates of Sample Coverage on GROUP 4

(1) School Code	(2) Transcripts* Coded	(3) Grade Span	(4) Registered Seniors T	(5) Registered Seniors Y^b	(6) Number With 1967 ID's C	(7) Number With 1967 ID's Y^c	(8) % With ID's [d]	(9) % With Transcripts[d]
1101	90	7-12	105	100	99	96	96.0%	90.0%
1201	402	10-12	445	452	442	406	89.8%	88.9%
1202	264	7-12	280	286	305	273	95.5%	92.3%
1203	496	10-12	527	517	510	499	96.5%	95.9%
1204**	267	9-12	278	279	258	275	98.6%	95.7%
1301	114	9-12	130	131	132	---	92.4%	87.0%
1501	130	7-12	183	171	133	---	-----	76.0%
2101	389	10-12	398	---	422	---	-----	92.2 - 97.7%[d]
2102	410	10-12	450	437	430	406	92.9%	93.8%
2103**	393	9-12	407	---	298	---	-----	96.6%[d]
2104**	181	9-12	181	188	215	156	83.0%	96.3%
2105**	142	10-12	140	143	166	124	86.7%	99.3%
2301	102	8-12	104	104	102	104	100.0%	98.1%
2401	259	10-12	286	290	294	265	91.4%	89.3%
2501	149	9-12	168	171	162	155	90.6%	87.1%
3301	161	7-12[a]	170	164	179	155	94.5%	98.2%
3401	95	-----	---	---	113	---	-----	84.1%[d]
3501	124	-----	150	---	146	---	-----	82.7 - 84.9%[d]
4101**	102	9-12	120	113	123	99	87.6%	90.3%
4201	84	9-12	95	102	109	92	90.2%	82.4%
4301	120	9-12	---	161	135	123	76.4%	74.5%
4401**	554	10-12	---	729	433	558	76.5%	76.0%
4402**	481	10-12	---	620	372	534	86.1%	77.6%
4403	648	10-12	731	757	688	662	87.5%	85.6%

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*See text for explanation

**See text for explanation

[a] Was 7-12 in 1965; 9-12 in 1969

[b] Registered seniors is estimated by two entries: T was the number of seniors in the graduating class as recorded on the transcripts (the student's rank was recorded as X-rank out of T seniors); Y was the number of seniors either pictured or listed in the yearbook. The Y figure was used in the percentages reported in the final column. Where T is greater than Y the reader should adjust the percentages if desired.

Notes to Table 2.2.1 (continued)

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[c] The number of 1967 ID's is estimated by two entries: C is the number of persons reported by ETS to have been surveyed from each school in the junior year, 1967; Y is the number of seniors listed in yearbooks who could be matched with 1967 ID's.

[d] These percentages were always calculated with the "Y" figures as a base unless specifically noted by a "d" superscript. The entry for school 2103 employed the base of 407 rather than 298 for obvious reasons.

were supplied by ETS for 1967 eleventh grade students in three large urban school systems. Supplementary data compiled by the Johns Hopkins staff were drawn from high school transcripts, school rosters, and high school yearbooks.

Although the Growth Study supposedly covers 27 high schools in 17 communities (see Table 2.1.1), supplementary Hopkins data were available for only 24 high schools in 15 communities. One community supplied unusable transcripts, and another, as best we can determine from the ETS data, appears to have withdrawn from participation after 1961. The school codes for the high schools included in the supplementary Hopkins data collection are given in Table 2.2.1, together with the following information: a) the number of transcripts coded for that school; b) the grade span of the school; c) the number of seniors registered in the school in 1969; and d) the number and e) the percent of the seniors in the school who could be matched with an identification number from the 1967 junior year roster and hence who could be identified as being in the existing ETS data file. Missing entries indicate unknown information. All entries were ascertained by the Hopkins staff. The figures in columns (3), (5), (7), (8), and (9), though carefully compiled, nevertheless are from school yearbooks and, therefore, may be somewhat in error. Not knowing official school enrollments for these classes obviously complicates further the already difficult task of judging the adequacy of our procedures. To the degree that yearbook rosters were incomplete, we overestimate coverage; on the other hand, students who transferred into the schools or systems as seniors are included here and inflate estimates of sample attrition from the eleventh to the twelfth grades.

Several comments concerning the data in Table 2.2.1 are appropriate. Of the 6157 persons for whom transcript ID's were available, 38 could not be linked to an identical number on the master data file. Thus, there are 6119 students on the Master Tape for whom there exists a racial code taken from transcripts (either black, white, oriental, or missing). The number of transcripts coded for each of the 24 high schools is given in column 2 of Table 2.2.1. The information presented in columns (4)-(9) was compiled in order to gain some sense of our coverage of the student bodies in these schools (no estimates were available from ETS to use for this purpose).

In several instances (marked by a double asterisk on Table 2.2.1) the number of transcripts coded (which necessitates location of an ID number) exceeds one estimate of the number of persons "for whom an ID number was located" (columns 6 and 7). These inconsistencies result from the different matching procedures employed in the two tasks which generated these matches. In obtaining matches for transcripts -- matching the transcript name to a name and birthday and ID number appearing on a computer roster of all (1967) juniors from the school who had participated in the Growth Study -- quite detailed information was available to determine student identities. For example, the roster was sorted alphabetically EVEN THOUGH a truncated version of the student's name was dumped onto the roster. Thus, the order (first or second) of each of 2 entries SMITH MAR, for example, would indicate which ID belonged to "Mary Smith" and which belonged to "Margaret Smith." If, additionally, transcripts for two students both named "Mary Smith" were available, differing birthdays could be used to decide identities. Furthermore, within large districts, for example district 21, transcripts appearing in one school for which no ID number could be found within that school's roster often indicated that the student was a transfer into that school during the last half of the junior year or during the senior year, having spent the fall of 1967 in one of the other high schools in the community. Such information allowed us to trace the student and assign an ID number appearing in the roster for the originating high school.

Unfortunately, we were unable to be as thorough in matching yearbook names and names appearing on the 1967 enrollment rosters. Here, students of dubious identity were counted as "lost cases" -- seniors in the yearbook for whom no ID numbers were available. Missing or lost cases in large districts were not systematically searched for in other school rosters in that district. In some schools (example 4402), large numbers of students who had valid ID's in 1967 appeared in the yearbook but apparently either did not graduate (no transcript) or had transferred to that school from another in the study.

The transcript matching task was conducted several months prior to the yearbook-name matching task. The former was done to obtain racial data and to evaluate our coverage of graduates from these schools. The latter was done to fill in additional racial data and to provide lower-bound estimates of the adequacy of the Growth Study's sampling of students in these senior classes. We are reasonably confident that the larger of the two adjacent percentages within each school sets a floor on the percentage of these senior year classes which was included in the Growth Study's junior year survey. An unknown proportion of the suggested sample loss is due to inflation of the senior year class size over the junior year class size due to transfers into the school; likewise, an unknown proportion is due to the absence of stable, non-transfers from earlier data acquisitions.

In 19 of the 24 schools the sample coverage is estimated to exceed 85 percent of enrolled students. Therefore, although the schools themselves are not guaranteed to be representative of the adolescent high school population, we do at least have reasonably complete coverage of the student bodies of the schools that were in the project. This at least avoids any secondary distortion.

2.2.B. The GROUP 4 Occupational Aspiration Subsample

A small portion of the analyses on the GROUP 4 sample addresses the distribution of and realism of occupational aspirations. Students were asked if they had seriously thought about what they wanted to do for their lives' work and, if so, what occupation they had considered. This question was asked on all three waves of the BEQ (see Chapter 3) and on the senior questionnaire. Unfortunately, the actual occupational information written in by the student was never coded by ETS. The Hopkins staff was able, however, to locate a small number of original senior questionnaires for GROUP 4 students from schools 4401-4403 (see Table 2.2.1). One thousand nine hundred sixty of these were able to be matched by ID to GROUP 4 senior year data on the ETS supplied magnetic tapes. For these students, information on occupational aspirations was coded into the 1970 Census of Population Occupational Classification and added to their records.

Of these 1,960 respondents, however, only 700 were successfully matched by ID number to an earlier ID number (i.e., pre-senior year) on the Master file. Most matching failures resulted from transfers into the ETS study in 1969 and from the inadvertent (we assume) assignment of new numbers to seniors who already had another ID number in previous administrations (about 100 of these re-assignments were uncovered). At a maximum, therefore, 700 students in GROUP 4 are available for the occupational aspiration analyses. Even worse, however, of these, 311 have codes in the range of 995-998, indicating either missing data or uncodable responses on the questionnaire. Thus, we have only 389 GROUP 4 respondents with usable information on occupational aspirations (the occupational aspiration item was worded such that if respondents indicated they had given no serious thought to their occupational interests, no written occupational title was elicited. Hence, many students failed to provide any response to this part of the question). This small number of students, combined with additional case loss due to individual item missing data on other crucial variables, precludes a detailed analysis of the determinants and consequences of occupational aspirations with these data.

2.2.C. The Composite Racially Identified GROUP 4 Sample

Table 2.2.2a classifies all persons in our sample for whom racial information is available (either from ETS or transcript records) separately by race and sex. These 7533 persons constitute the maximum usable GROUP 4 sample. Table 2.2.2b presents parallel information for those persons for whom transcripts were available (largely high school graduates). Table 2.2.2c presents racial breakdowns for the two subsets of persons available for the analyses on occupational aspirations. We have no base estimates other than those given earlier (section 2.2.A., above) to determine the coverage represented by this number of persons.

Tables 2.2.2 Racially Identified Subsamples of GROUP 4

Table 2.2.2a: All Persons in GROUP 4 for Whom Racial Data Exist by Race and Sex

	WM	WF	BM	BF	T
N	3037	3002	748	746	7533
%	40.3	39.9	9.9	9.9	100.0

Table 2.2.2b: All Persons with Transcripts for Whom Racial Data Exist by Race and Sex

	WM	WF	BM	BF	T
N	2465	2504	522	604	6095
%	40.4	41.1	8.6	9.9	100.0

Table 2.2.2c: All Persons in GROUP 4 And the Transcript Sample with Racial and Occupational Aspiration Data

	Total GROUP 4			Transcript		
	W	B	T	W	B	T
N	243	146	389	240	140	380
%	62.5	37.5	100.0	63.2	36.8	100.0

2.3 THE AEQ-GROUP2 FOLLOW-UP SAMPLE

2.3.A. The Core AEQGP2 Sample

A total of 4270 questionnaires were sent to the 1965 graduates of districts 12 and 44: 1639 in district 12 and 2631 in district 44 (Hilton, 1971: 157). Of these, 3058 were returned: 1010 from district 12 and 2048 from district 44 (Hilton, 1971: 157). However, only 2873 records appeared on the follow-up tape obtained from ETS for use by the Hopkins staff. We have been unable to determine the reason for this discrepancy -- whether due to incomplete questionnaires being deleted, cases lost in processing, the omission of new senior transfers, etc. Of these 2873, only 2236 were successfully matched by ID number to persons appearing previously in the GROUP 2 sample (see sample plan, Section 2.1, above).

Table 2.3.1 presents these figures, with additional data intended to help the reader evaluate the severity of data attrition and the composition of the resultant sample. As indicated earlier, no racial data were obtained by ETS on the 1965 graduates. These data were obtained by the Hopkins staff from 1965 yearbooks from the seven high schools included in the follow-up sample; a linking tape containing ID numbers and student names was supplied by ETS for this purpose. While racial data were being extracted from the yearbooks, school-by-school approximations of senior class sizes (row D of Table) and of successfully-matched GROUP2-AEQ respondents (row E of Table) were obtained. The initial 72 percent return rate quoted by ETS (Hilton, 1971: G-1) actually is an effective return rate of only about 52 percent for the GROUP2-AEQ Master Tape; that is, 52 percent of the mailed questionnaires were both returned and successfully linked to earlier data (see lines (1) and (3) on Table 2.3.1).

Table 2.3.1 Estimated Sample Retention for the AEQ 1965 Respondents on Master Tape

	SYSTEM 12	School 1201	School 1202	School 1203	School 1204	SYSTEM 44	School 4401	School 4402	School 4402	GRAND TOTAL
A. Questionnaires Sent to Senior Graduates from 1965 by ETS	1639					2631				4270
B. Questionnaires Sent Back by 1965 Seniors	1010					2048				3058
C. Questionnaires on the AEQ Tape Sent by ETS										2873
D. Seniors Pictured or Listed in Yearbooks	1674	584	292	496	302	2000	727	678	595	3674
E. Seniors on AEQ Tape Who Have 1963 ID Number Matches	991*	334	165	326	159	1245*	325	340	422	2236
F. Seniors with 1963 ID Matches for Whom Race Information Exists										
(a) Number Black	29	10	11	7	1	193	146	43	4	222
(b) Number White	953**	322	154	318	158	821**	168	239	414	1775
(c) Number Oriental	1	1	0	0	0	61	11	47	4	63
(d) Number Unknown	8	1		1		168		11		176**
G. Previous Estimate of the Comprehensiveness of the 1963 (Junior) Coverage Based Upon 1969-1967 Figures (See Table 2.2.1, "% With ID's" column (8)).		89.8%	95.5%	96.5%	98.6%		76.5%	86.1%	87.5%	

Table 2.3.1 (continued)

		SYSTEM 12	School 1201	School 1202	School 1203	School 1204	SYSTEM 44	School 4401	School 4402	School 4403	GRAND TOTAL
PERCENTAGE OF SAMPLE RETENTION BASED UPON ESTIMATES GIVEN IN A - G, ABOVE											
(1)	B/A	61.6%					77.8%				71.6%
(2)	C/A										67.3%
	C/B										94.0%
(3)	E/A	60.5%					47.3%				52.4%
	E/B	98.1%					60.8%				73.1%
	E/C										77.8%
(4)[a]	F/A	60.0%					40.9%				48.2%
	F/B	97.3%					52.5%				67.3%
	F/C										71.6%
	F/E										92.0%
(5)	E/D	59.2%	57.2%	56.5%	65.7%	52.6%	62.2%	44.6%	50.1%	70.8%	60.9%
(6)	G - (1-B/A)[b]		51.4%	57.1%	58.1%	60.2%		54.3%	63.9%	65.3%	

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*This number includes 7 persons in district 12 which we could not place in a particular school; includes 158 persons in district 44 which we could not place in a particular school (no school code existed).

**This number includes 1 white in district 12 which could not be placed in a particular school; includes 1 white in district 44 which we could not place in a particular school. Such was possible because, in each district, two students with the same names were located in two different schools -- but both were white.

[a] Just persons of known racial identification are included in the numerator of this fraction.

[b] This figure constitutes the MINIMUM total coverage to be expected if the missing persons in one wave were mutually exclusive from the missing persons in the second wave of data collection (i.e., no overlap, all lost), while the case base remained the same (i.e., no transfers who would not be expected to be covered in the first wave were included in the second wave). The presence of transfers might account for large apparent losses in district 44.

Sample attrition among district 44 students thus is rather marked, with the rate being somewhat better in district 12. Additionally, these all are high school graduates. Hence, any conclusions about career patterns drawn from these data could not be generalized to eleventh or twelfth grade dropouts. As might also be expected, the individual school estimates of return rate among seniors (see line (5) of Table 2.3.1) are related to the socioeconomic level of the school's student body. As the proportion of blacks and of students in non-academic tracks increases, the estimated response rate decreases (this was also the case for the coverage rates in GROUP 4, with the additional complexity that coverage rates for small, generally rural schools were better than those for large, urban schools). Thus, the AEQGP2 (as well as the GROUP 4) sample overrepresents students from more advantaged homes and students enrolled in college preparatory tracks.

2.3.B. The AEQ Occupational Aspiration Analysis Subsample

We were able to obtain from ETS a small number of original 1965 senior questionnaires for one school (1203) in the AEQ follow-up. These were used to gain information on occupational aspirations (see above under GROUP 4 discussion). About 280 of these students' responses could be linked with original ID numbers on the Master tape. Attrition due to individual missing data or uncodable occupational aspiration data reduced this number to 237. Item loss on other variables employed in preliminary analyses of the determinants and consequences of aspirations resulted in so much additional sample attrition that these investigations were abandoned.

2.3.C. The Composite Racially-Identified Sample

We were able to obtain usable racial data for 92 percent (2060) of the 2236 successfully matched AEQGP2 respondents (see Table 2.3.2). Well over 50 percent of the racially-identified persons are female. The sex ratio is especially unbalanced among blacks. Other sample peculiarities may result from historical circumstances surrounding the project and this cohort. Given the fact that these young men were approximately 21-22 years of age in 1969 (the midst of the Viet Nam conflict), it is understandable that a goodly number of them might be either dead or otherwise inaccessible for data collection during the follow-up administration. The subsample of AEQGP2 respondents for whom we have valid occupational aspiration data is almost totally white (6 black students out of 237).

2.4 THE COMPARABILITY OF THE GROUP 4 HIGH SCHOOL SAMPLE AND THE AEQ-GROUP 2 FOLLOW-UP SAMPLE

The research designs underlying GROUP 4 and GROUP 2 data acquisition are complementary in important respects and use of both considerably enhances the value of the Growth Study for informing the sorts of questions presently at issue. In particular, the GROUP 4 data extend back to the fifth grade, but terminate in the twelfth; the GROUP 2 data, on the other hand, go back only to grade nine, but include a valuable post-high school follow-up not available for GROUP 4 students. Hence, in combination, the GROUP 2 and GROUP 4 data trace students' educational experiences and social development from the fifth grade through three years beyond high school graduation. The virtues

Table 2.3.2 Race and Sex Composition of AEQGP2 Sample

	RACIAL INFORMATION				
SEX INFORMATION	Black	White	Oriental	Missing	TOTAL
Male	90	797	29	90	1006
Female	132	978	34	86	1230
Total	222	1775	63	176	2236

Overall Sample Percentage Female:	55.0%	Oriental Percentage Female:	54.0%
Black Sample Percentage Female:	59.5%	Known Race Percentage Female:	55.5%
White Sample Percentage Female:	55.1%		

of such a time frame for studying vocational development during the school years should be self-evident. At the same time, working with the Growth Study data in this way is fraught with difficulties, for GROUPS 2 and 4 are not commensurate in many potentially critical respects:

A: Geographic location: GROUP 4 students are drawn from schools all over the United States; AEQ students from only two communities.

B: Rural/Urban location: Approximately 25 percent of the GROUP 4 students are from schools that could be classified as rural (about 1500 of 6000, based upon transcript sample, see Table 2.1.1); all AEQ students were enrolled in schools in large urban areas.

C: Reference Cohort: GROUP 4 students constituted the high school class of 1969; AEQ respondents were members of the class of 1965.

D: Academic Success: AEQ respondents are, minimally, high school graduates; GROUP 4 students are not necessarily so.

E: Coverage of Senior Year Cohort: We have estimated that sample coverage in GROUP 4 was approximately 85 percent (see Table 2.2.1: about 6900 registered seniors, and about 6000 coded transcripts). Of all high school graduates in the AEQ communities only about 50 percent (see Table 2.3.1, about 2200 out of 4300) are included in our sample.

Given the discontinuous but complementary nature of our data sets -- GROUP 4 spanning grades 5-12 and the AEQ spanning grades 9-3 years post graduation -- our analysis would be considerably strengthened were we able to establish the comparability of these two data sets. Our results then would characterize an extended period of social development, from pre-adolescence to early adulthood. We next explore whether the two files can, in fact, be treated analytically as homogeneous without doing grave injustice to their idiosyncrasies. We do so by comparing characteristics of the white males in the two samples. The differences here are quite representative of those observed more generally.

In Tables 2.4.1 and 2.4.2, we present comparisons among 5 groups of white males on 11 achievement/aptitude tests and 10 variables selected to represent background and vocation/education orientation dimensions. The five groups of adolescents are described below.

(1) GROUP4: These students are drawn from all 15 communities (24 high schools) which supplied transcripts of graduates to ETS. Eleventh grade measures were collected in the fall of 1967, twelfth grade measures in the early spring of 1969.

(2) 2 COMM GROUP4: These students comprise the subset of the GROUP 4 students who were drawn from the two communities employed in the AEQ follow-up study. Comparisons between this subgroup and the total GROUP 4 will indicate community variation; comparisons between this and the AEQ group will indicate differences over time within comunities.

(3) AEQ: This group is the follow-up sample of 1965 high school graduates from two communities which, along with GROUP 4, will comprise the sample for the majority of our analysis. Eleventh grade measures were collected in the fall of 1963, twelfth grade measures in the early spring of 1965.

(4) OCCASP GROUP4: These students are those from the class of 1969 for whom we had original senior questionnaires; this group forms the basis for our GROUP 4 analyses of the distribution of occupational aspirations. All of these students were, however, drawn from only one of the two communities employed in the AEQ follow-up study. Specifically, about 28 percent were from school 4401, 26 percent from school 4402 and about 46 percent from school 4403, the school in community 44 with the highest socioeconomic status composition of the student body.

(5) OCCASP AEQ: These students are those from the class of 1965 for whom we had senior questionnaires reporting their occupational aspirations. They are drawn from only one school in one community (1203); therefore, both temporal, geographical, and socioeconomic differences exist between these and the OCCASP GROUP4 students.

Our first comparisons -- those based upon performance on standardized aptitude and achievement test batteries -- present, on the whole, evidence that the five groups of students are quite similar on academic performance and potential (see Table 2.4.1). Specifically, within-test differences in mean score range between 3 and 5 points on eight of the tests. In all but three instances standard deviations also are quite similar. There are, however, startling differences between the standard deviations for the SCAT tests in the AEQ sample relative to the other groups. We have no explanation for this discrepancy. To our knowledge the same SCAT form (2B) was employed in both the 1963 and 1967 eleventh grade administrations.

Conclusions are slightly different when senior year performance measures are employed as criteria. AEQ respondents do better on the PSAT verbal test

Table 2.4.1 White Male Sample Comparisons[a], Standardized Performance Measures

Sample Statistics			(1) GROUP4	(2) 2 COMM GROUP4	(3) AEQ	(4) OCCASP GROUP4	(5) OCCASP AEQ
11th Grade							
	STEP MATH	$\bar{X}$	280.15	279.71	284.77	280.55	284.83
		S.D.	15.00	14.46	13.10	17.17	11.67
		N	2584	1246	634	173	118
	STEP SCIENCE	$\bar{X}$	284.19	283.97	287.03	284.62	285.59
		S.D.	13.54	13.68	13.20	13.74	13.99
		N	2570	1252	633	173	118
	STEP SOCIAL ST	$\bar{X}$	279.72	278.57	284.30	278.40	285.54
		S.D.	15.46	14.83	14.96	15.76	13.79
		N.	2572	1249	633	173	118
	STEP READING	$\bar{X}$	291.46	291.77	294.70	294.42	293.52
		S.D.	18.12	17.31	16.75	16.34	16.81
		N	2580	1252	636	173	118
	STEP LISTENING	$\bar{X}$	291.28	290.98	294.35	292.16	294.52
		S.D.	15.25	14.96	14.65	17.10	13.18
		N	2571	1241	631	171	119
	STEP WRITING	$\bar{X}$	284.55	283.82	288.05	287.37	287.68
		S.D.	18.06	17.34	16.58	16.97	15.10
		N	2574	1248	633	174	118
	SCAT VERBAL	$\bar{X}$	284.32	283.69	283.07	283.65	285.87
		S.D.	14.40	14.40	35.14	16.36	12.42
		N	2602	1264	640	170	119
	SCAT QUANT	$\bar{X}$	297.47	297.75	299.55	301.23	302.35
		S.D.	17.68	17.10	37.68	18.65	16.20
		N	2599	1261	640	170	119
	SCAT TOTAL	$\bar{X}$	290.38	290.11	290.21	291.52	292.99
		S.D.	13.59	13.10	35.25	14.02	11.97
		N	2598	1260	640	169	119
12th Grade							
	P/SAT VERBAL	$\bar{X}$	396.66	391.58	412.91	408.86	412.52
		S.D.	120.05	115.56	114.70	121.42	115.83
		N	2180	1061	682	171	118
	P/SAT QUANT	$\bar{X}$	440.56	429.30	471.99	450.07	476.72
		S.D.	134.59	127.44	124.73	142.34	118.20
		N	2177	1063	682	172	118
			2647 MAX	1299 MAX	826 MAX	182 MAX	124 MAX

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[a] See text for sample abbreviation explanations.

than do students tested in the same communities four years later (columns 2 and 3; 21 points in mean difference, relative to standard deviations of about 115), and tend to outperform all GROUP 4 students on the quantitative test. Some of these discrepancies can, doubtlessly, be attributed to the fact that all AEQ respondents were at least high school graduates. Other differences perhaps reflect the well-documented trend of decline in SAT scores over the last 10-15 years. The first discrepancy can be dealt with by limiting GROUP 4 analysis to high school graduates. The second we cannot reduce.

Similarities and discrepancies between these five groups of students also are apparent on the several non-performance measures we are able to consider (see Table 2.4.2). AEQ respondents are more likely to have parents who continued their education beyond high school (column 3) as compared to 1969 seniors from the same communities (column 2, difference about 10 percent for father's and 6 percent for mother's education). However, 1969 seniors from community 44 (column 4) are by far the most socioeconomically advantaged (almost half of these students are drawn from a school that routinely sends over 70 percent of its seniors to college). Therefore, along background dimensions we can conclude that among white males: AEQ students are more socioeconomically advantaged than their counterparts surveyed 4 years later (the total GROUP 4); the subsample of GROUP 4 students serving as the basis for an analysis of occupational aspirations is, however, even more advantaged still, and especially so in comparison to the corresponding subsample of AEQ students for whom occupational aspiration information is available (column 5).

Table 2.4.2 White Male Sample Comparisons,[a] Marginal Distributions on Selected Background, Planning, and School Process Variables

Comparison Variables		(1) GROUP4 1969 %	(2) 2 COMM GROUP4 1969 %	(3) AEQ 1965 %	(4) OCCASP GROUP4 1969 %	(5) OCCASP AEQ 1965 %
A) Father's Education	0-8 YR	8.1	7.2	8.4	6.6	9.6
	9-12 YR	52.0	56.9	46.1	41.9	54.8
	13-20 YR	39.9	35.8	45.6	51.5	35.7
	N	(2419)	(1159)	(562)	(136)	(115)
B) Mother's Education	0-8 YR	5.7	5.9	6.7	3.0	9.9
	9-12 YR	61.5	66.1	59.2	53.7	64.0
	13-20 YR	32.7	28.1	34.0	43.3	26.1
	N	(2435)	(1155)	(564)	(134)	(111)
C) Curriculum 11th grade	ACAD	59.5	56.8	76.7	79.5	75.9
	BUS	6.2	6.4	5.0	3.9	11.2
	GEN	16.0	16.5	14.9	11.0	12.9
	OTHER	18.2	20.3	3.4	5.5	0.0
	N	(2442)	(1155)	(597)	(127)	(116)
D) JR. Year College Plans	4 YR	52.1	49.7	49.3	53.9	52.9
	N	(2089)	(1021)	(619)	(115)	(119)
E) SR. Year College Plans	2 YR & 4 YR	66.3	63.1	76.1*	78.8*	72.1*
	N	(2100)	(984)	(648)	(160)	(115)
F) THOT of Occup. in JR. Year	Yes	67.6	69.5	67.9	65.5	73.1
	N	(2544)	(1218)	(619)	(142)	(119)
G) THOT of Occup. in SR. Year	Yes	67.0	66.9	77.1	56.8	72.4
	N	(2263)	(1072)	(694)	(176)	(123)
H) THOT of Educ & Voc JR. Year	FREQ	49.9	49.0	55.1	55.2	47.1
	N	(2499)	(1176)	(619)	(145)	(119)
I) Definite Plans After H.S.	Yes	87.8	86.0	89.4	86.7	90.7
	N	(2171)	(1015)	(672)	(166)	(118)
J) College Status SR Year	Accept	24.4	22.2	13.1	3.6	25.0
	Applied	39.7	43.1	50.9	43.1	61.4
	Not Applied	35.8	34.5	36.0	53.3	13.6
	N	(1487)	(663)	(505)	(137)	(88)
		2647 MAX	1299 MAX	826 MAX	182 MAX	124 MAX

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[a] See text for sample abbreviation explanations

Again with respect to while male adolescents, the proportion of students enrolled in a college preparatory track (row C) appears to differ greatly across the five groups. These differences involve mainly proportions of students enrolled in the "OTHER" and the academic curricula. The presence of two vocational high schools in the GROUP 4 sample and the availability of agricultural programs in some of the rural schools (columns 1 and 2) certainly contribute to these disparities. The concentration of students in a college track in our OCCASP GROUP4 occupational aspiration sample (column 4) probably is a reflection of the favored socioeconomic circumstances of this school's student body. The small proportion of AEQ (column 3) respondents enrolled in vocational tracks is somewhat surprising since one of the schools in this sample was a specialized vocational institution. Clearly, there existed track distinctions within this high school.

In the junior year of high school, college plans (row D) were virtually identical for white males across the five groups. By the senior year (row E) AEQ students were much more likely to plan to go to college (column 3) than were their 2 COMM GROUP4 counterparts (column 2), although, again, the smaller sample of OCCASP GROUP4 students from community 44 (column 4) evidenced the highest level of college aspirations.[2] Occupational forethought in the junior year (row F) was reasonably similar across the five groups. In the senior year (row G), however, the picture changed. AEQ students were much more concerned with their occupational futures. Moreover, those students who were most likely to have college plans in their senior year (column 4) were least likely to have given thought to their occupational futures. (See also row H.) All groups were equally definite in their senior year about their plans following graduation (row I).

AEQ respondents (column 3), their 2 COMM GROUP4 counterparts (column 2), and the total GROUP4 white male sample all were about equally likely to have applied and/or been accepted into college (with some differences in the exact split between these possibilities). On the other hand, both of the subsamples for which information on occupational goals is available depart substantially from the specific patterns characteristic of their respective parent samples. The AEQ group has, by a considerable margin, the highest percentage of college applicants, while the GROUP 4 sample has the lowest percentage accepted into college as of the senior year survey and is the only group with fewer than fifty percent having either applied or been accepted into college. Students in the other subsample with occupational goals, that is, the OCCASP AEQ group (column 5), were the most likely of all groups to have both applied and been accepted by a college.

On balance, then, the data in Tables 2.4.1 and 2.4.2 suggest that GROUP 4 students in the two communities included in the AEQ follow-up (2 COMM GROUP4) are not very different from the larger GROUP 4 sample (compare columns 1 and 2, Tables 2.4.1 and 2.4.2); on the other hand, GROUP 4 - GROUP 2 differences are more substantial. The groups seem to differ most on family background variables and college application/acceptance status as of the senior year of high school. Generally, the two subsamples with occupational aspiration data are more different from their respective parent samples than the parent samples are from one another. Hence, we must be especially cautious in our work with these two groups.[3] Most of the other differences, however, are rather minor and consistent with what known differences in school and student body characteristics would lead us to expect. We conclude, therefore, that extrapolating our findings over a ten year period will be both informative and appropriate, with the following cautions being employed:

(1) GROUP 4 analyses will be limited to students for whom we have transcript data, thus largely high school graduates.

(2) Scale construction can be conducted using all available students without regard for school membership.

(3) Analyses conducted within either the GROUP 4 or AEQ samples which are not extrapolated across samples can be conducted on all available students without regard for school membership.

(4) In analyses whose results we wish to generalize across the entire ten year span we must (a) employ only those GROUP 4 students for whom we have transcripts indicating that they, like the AEQ respondents, are high school graduates, and (b) control for the main effects of school membership.

Operating on the assumptions that (1) the school processes under investigation are quite similar across schools (no research of which we are aware has ever found such differences to be large or patterned), and (2) these processes are perhaps different within schools for graduates and students who either dropout or fail in their eleventh or twelfth grades in school, these precautions should allow us to make maximum use of our data with minimum distortion. Therefore, for purposes of extrapolation, our AEQ sample consists of 2060 persons (who were high school graduates) for whom racial information is available. The comparable GROUP 4 sample consists of 6095 (out of 6119) students for whom both transcript and racial information are available.

FOOTNOTES

[1] These yearbooks were obtained to better familiarize ourselves with the schools included in the study and we gratefully acknowledge the assistance given to us in this respect by the schools. Student composition (grade cohort sizes), sports opportunities, variety of clubs, faculty size and speciality of faculty, curricula offered, senior honor awards conferred -- all these and other data about each school were informally gleaned from the yearbooks, affording a richer sense of the local school contexts. These data were also coded for each school to allow us to examine any potential school-to-school variations that might be either marked or systematic. The subsequent failure (see analysis chapters, below) of any meaningful school effects to emerge led us to omit consideration of these variables from this report. Therefore, although our actual analyses did not directly benefit from the information in these yearbooks in the manner originally anticipated, the project would have suffered greatly had they not been acquired. Upon subsequent discovery of the paucity of racial identifiers and the total lack of any figures on sample comprehensiveness we were able to turn to the yearbooks to obtain estimates for these crucial data. Again, we greatly appreciate the cooperation of and the interest in our work evidenced by the administrations of the Growth Study high schools.

[2] It should be noted that the nature of the college plans of these students in the senior year varied by group. In community 12 (column 5), 71.3 percent planned to attend a 4 year college and only .9 percent planned to attend a 2 year institution. In community 44 (column 4), 50.0 percent were oriented

toward 4 year and 28.8 percent toward 2 year institutions. In the AEQ sample (column 3) the parallel percentages were 60.5 and 15.6. There exists a much more extensive junior college system in the state containing community 44 than in the other states in the sample. The availability of easily accessible colleges and the historical differences between 1965 and 1969, rather than changes in student motivations, are, we suggest, the more likely explanation for these mean level differences (see also row J; the relative ease of access to higher education can also account for radical differences in the rates of college application as of January-February of the senior year between students in communities 44 and 12).

[3] These sample discontinuities also contributed to our decision to abandon extensive examination of adolescent occupational aspirations using these subsamples.

Chapter 3 -- Instrumentation and Analytical Procedures

In the previous chapter a summary of the data available for the present research was given in Table 2.1.2. The information referenced in Table 2.1.2 which is employed in the following chapters, as well as major analytical tools used in the analyses of that information, will be detailed below. This data overview is organized around the following variable groupings: 1) Demographic and Background Characteristics; 2) Skills and Knowledge; 3) Planning and Plans (including values); and 4) Activities of Adolescents and Young Adults. The variable abbreviations presented here will be used throughout the remaining chapters. The final section of this chapter is devoted to analysis issues.

3.1 DEMOGRAPHIC AND BACKGROUND CHARACTERISTICS

Demographic and background indicators employed in the present research include high school attended, sex, race, father's education, mother's education, and father's occupation.

3.1.A. High School Attended (SCHOOL)

Twenty-four high schools were represented in the GROUP 4 panel and seven in the AEQ GROUP 2 follow-up panel (see Sampling Plan in Chapter 2). High school attended (for the junior year for GROUP 4 and the junior and senior years for AEQ students) was indexed as a set of dummy dichotomous variables. These are included in all regression analyses as a set of controls immediately after personal demographic and ability measures. The same school ("number 24") was suppressed in analyses for both the class of 1969 and that of 1965.

3.1.B. Sex (SEX) and Race (RACE)

Information on the respondent's sex was obtained by ETS from school records. Females are coded "1," males as "0."

As explained earlier (see Chapter 2), racial information was obtained by ETS from school counselors and other sources only for students in three large urban communities in the GROUP 4 sample (in their junior year, 1967). Other GROUP 4 and all AEQ youth were assigned race codes by the Hopkins staff through the use of ETS rosters, high school transcripts and school yearbooks. No reliabilities from the ETS data are available. The same individual coded all racial data added at Johns Hopkins and no reliability estimates were calculated.

For purposes of original coding, the ETS staff employed the following categories: Negro and Non-Negro in 1 community; Negro, White, Other, Spanish, and Oriental in two communities. The Hopkins staff employed three codes, Black, Oriental, and White (other). Unless otherwise noted, a dichotomous classification for race is used in the present analyses, with Black coded "1" and White (including Oriental) coded "0." Hopkins data were used where they were available, supplemented by the ETS codes where needed.

3.1.C. Parental Status Characteristics

3.1.C.1. Father's and Mother's Education (FAED, MOED)

These data were obtained from the eleventh grade version of the "Background and Experiences Questionnaire" (BEQ)[1] administered by ETS. In the

GROUP 4, 1967, version the two parallel questions were phrased as follows:

> How much formal education does your father (mother) or male (female) guardian have?
>
> 1 = Grade school
> 2 = Some high school
> 3 = Graduated from high school
> 4 = Some college, junior college, business or trade school (after completing high school)
> 5 = Graduated from college
> 6 = Some graduate or professional school (e.g., law, medicine)
> 7 = Obtained a graduate or professional degree
> 8 = Don't know

For analysis purposes these options were coded into years of schooling completed: 8, 10, 12, 14, 16, 17, and 19, respectively. "Don't know" was counted as missing data.[2]

In the eleventh grade AEQ-GROUP 2, 1963, administration, only three options, in addition to a "Don't know" category, were offered:

> 1 = Grade school
> 2 = High school
> 3 = College or special training after high school

These were recoded as 8, 12, and 16, respectively.[3]

3.1.C.2. Father's Occupation (FAOC)

Father's occupation data were not coded for the 1963, junior year administration of the BEQ in the GROUP 2-AEQ panel. These data are available for the 1967 juniors in the GROUP 4 sample. The following BEQ item elicited this information:

Which of the following occupational groups MOST NEARLY describes or is most similar to the occupation of your father or male guardian? If your mother or female guardian is the main support of your family, choose the group that best describes her occupation. Look over ALL the groups before making your decision.

1 = Technician -- such as draftsman, surveyor, medical or dental technician, nurse, etc.
2 = Official -- such as manufacturer, officer in a large company, banker, government official or inspector, etc.
3 = Manager -- such as sales manager, store manager, office manager, factory supervisor, etc.
    Proprietor or Owner -- such as owner of a small business, wholesaler, retailer, contractor, restaurant owner, etc.
4 = Semi-skilled worker -- such as factory machine operator, bus or cab driver, meat cutter, etc.
    Clerical worker -- such as a bankteller, bookkeeper, sales clerk, office clerk, mail carrier, messenger, secretary, etc.
    Service worker -- such as barber, beautician, waiter, etc.
    Protective worker -- such as policeman, detective, sheriff, fireman, etc.
5 = Salesman -- such as real estate or insurance salesman, factory representative, etc.
6 = Workman or laborer -- such as factory, farm, or mine worker, fisherman, filling station attendant, longshoreman, etc.
7 = Farm or ranch manager or owner
8 = Professional -- such as accountant, artist, clergyman, dentist, doctor, engineer, lawyer, librarian, scientist, college professor, social worker.
9 = Skilled worker or foreman -- such as baker, carpenter, electrician, enlisted man in the armed forces, mechanic, plumber, plasterer, tailor, foreman in a factory or mine.

Obviously, the categories offered here are not internally consistent and similar examples are employed in several of the categories. The average SEI (Duncan, 1961) score of the example occupations listed under each category was used to estimate the status of father's occupation.[4] This procedure resulted in respective codes of 52, 68, 56, 34, 56, 8, 25, 75, and 31.

3.2 SKILLS AND KNOWLEDGE

3.2.A. Scholastic Ability

3.2.A.1. School and College Ability Tests (ABIL)

The standard ETS academic aptitude test battery, the SCAT battery, was administered to the GROUP 4 Growth Study youth in the fifth, seventh, ninth and eleventh grades and to the AEQ youth in the ninth and eleventh grades (see data collection plan, Chapter 2). Three scores, the verbal, quantitative, and total scores, were available. We employ the Total SCAT score in the eleventh grade as our ability measure in both groups of youth. Although the earlier measures of ability obtained in elementary school were preferable conceptually, the desire when possible to use parallel procedures across the two panels dictated use of later data. The eleventh rather than ninth grade was chosen to minimize case loss due to sample attrition.

According to Hilton (1971) the "SCAT measure the two abilities which research in measurement indicates to be most closely related to success in the largest number of school studies: verbal and quantitative. The SCAT subtests are long enough (25 minutes, with 50-60 questions for Verbal and 45 minutes with 50 questions for Quantitative) to provide for reliable measurement of individual performance. Reliabilities for SCAT Verbal range from .92 to .94, for SCAT Quantitative from .88 to .93, and for SCAT Total from .95 to .96." (See Educational Testing Service, 1957a, for more detail.)

3.2.A.2. College Entrance Examination Board Preliminary Scholastic Aptitude Test (SAT-V; SAT-M)

The majority of the scores on these Verbal (SAT-V) and Quantitative (Math, SAT-M) aptitude measures come from the Preliminary Scholastic Aptitude Test battery administered by ETS to GROUP 4 and GROUP 2 youth in January or February of their senior year in high school. The score on the SAT was used for youth who had taken the regular December or January CEEB examination in their senior year. PSAT scores were multiplied by ten to achieve the 200 to 800 range of SAT scores.

The test was two hours long and contained opposites, sentence-completion, analogies, reading comprehension, and a variety of mathematical items. It was a version of the SAT, the most widely used test for college admissions. The two scores are used in Chapter 6, Section 2.

3.2.B. Scholastic Achievement, the Sequential Tests of Educational Progress (ACHV)

Achievement test scores for the eleventh grade were taken from the Sequential Tests of Educational Progress, or STEP, battery administered to the GROUP 4 and AEQ youth by ETS in the fall of their junior year in high school.

The STEP include six tests in the four major academic areas: communications (reading, listening, writing); social studies; science; and mathematics. Each of the six subtests is composed of from 50 to 80 questions and is administered in 70 minutes. The tests are primarily tests of power (how well a student works) rather than tests of speed (how fast a student works). The scores used in this research are the simple total scores obtained by summing the students' scores on the six subtests(see Educational Testing Service, 1957b, for more detail).

3.2.C. High School Job Information

All young adults in the AEQ sample who were employed outside of the home (from 1 hour to full-time per week) were asked about the extent of their previous job information concerning their present, adult entry position. Specifically, the youth were requested to respond to the following question:

> "Please think back now to your senior year in high school and check below the one statement that best describes what you knew then about your present job and how you knew it. If more than one statement is true, check the one that states how you learned most about what your job would be like:"
>
> 1 = I didn't know jobs like mine existed.
> 2 = I knew there were jobs something like mine, but didn't really know what people did in them.
> 3 = I knew what jobs like mine were like because I had known people in them.
> 4 = I knew what jobs like mine were like because I had seen people working at them even though I didn't know the people.
> 5 = I knew what jobs like mine were like because I had been told about them by my parents, teachers, counselors, or someone else who should know, even though not working in the job.
> 6 = I knew what jobs like mine were like because I had worked in it, or in a job like it, before finishing high school.

The extent of occupational information obtained in high school as reflected in responses to this item is examined in Chapter 9, Section 2.

3.3 PLANNING, PLANS, AND VALUES

Two major types of plans are distinguishable. The first variety consists of "recognitions of the necessity to and attempts to formulate future plans." The second set consists of those plans themselves. The latter plans include plans for a particular high school curriculum, for college, for entrance into the labor market or the military, occupational preferences, and so forth. The former tap appreciation of the need to plan for one's educational and vocational future, attempts to discuss these tentative decisions with others, and formulation of "work values."

3.3.A. Planning Indicators

3.3.A.1. Contemplation of Vocational and Educational Futures

Two items concerning the degree to which youth had contemplated their educational and vocational futures were included on the seventh, ninth, and eleventh grade versions of the BEQ (OCC THOT; ED/OCC FUTR) and one was asked again on a short, senior year questionnaire (OCC THOT).

The first item, OCC THOT, was phrased slightly differently depending upon the age of the respondent pool to which it was directed, but in each instance the youth was asked to respond by circling either "yes" or "no." In the seventh grade the item read "During the last two years, have you thought about what you want to do for a living?" In the ninth it was phrased "During the last two years, have you seriously thought about what you want to do for a living?" And in the eleventh and twelfth grade administrations the wording was modified to ask "During the last two years, have you seriously considered any occupation(s) for your life's work?" The items were coded as dummy variables with yes receiving a "1" and no a zero.[5]

In the seventh grade youth were asked "How often have you THOUGHT ABOUT.... your future education and job?" This item, ED/OCC FUTR, was phrased as follows in the ninth grade: "During grades 7 and 8, how often have you THOUGHT ABOUT.... your educational and vocational plans?" And in the eleventh grade the item asked "During the last two years, how often have you THOUGHT ABOUT....your educational and vocational plans after high school?" At each grade level three response options were provided: 1= Rarely or never; 2= Occasionally; 3= Frequently.[6] The ED/OCC FUTR item, therefore, has a somewhat broader reference, in that it encompasses both educational and occupational plans. OCC THOT, in contrast, pertains only to career planning.

3.3.A.2. Discussion and Interaction Indicators

After the items asking youth how much they had thought about their educational and vocational futures (ED/OCC FUTR, see above), parallel items inquired how often they had TALKED ABOUT these futures with friends (FRND), Parents (PARS), Teachers (TEAH), and Counselors (COUN). In the first three instances the same response options appeared. In the case of counselors, the response options were 1= "none," 2= "Once or twice," 3="Three or more times."[7]

Three items tapping interpersonal support for higher education appeared in identical form in the ninth and eleventh grade versions of the BEQ. These are employed in Chapter 5, Section 4. These items pertain to Peers' Plans for College (PRPL), and Mother's and Father's Encouragement for College (MOEN, FAEN).

The first of the three asked:

> How many of your friends definitely plan to go to a regular four-year college? (Do not include those going to secretarial or business schools or junior colleges).
>
> 1 = Almost all (80% or more)
> 2 = Most of them (60 to 80%)
> 3 = About half (40-60%)
> 4 = Some of them (20 to 40%)
> 5 = Only a few of them (20% or less).

The parental encouragement items read:

> How does your mother (father) feel about your continuing your education beyond high school?
>
> 1 = Strongly favors it
> 2 = Moderately favors it
> 3 = Neither for nor against it
> 4 = Moderately opposed to it
> 5 = Strongly opposed to it.

The peers item was coded in five categories reflecting the percentages of friends planning to go to college: 90, 70, 50, 30, 10. The parental encouragement items were inverted and the same scale, interpreted as percentage of enthusiasm, applied.

3.3.B. Plans

3.3.B.1 Curriculum Plans for High School

On the seventh and ninth grade versions of the BEQ (GROUP 4), students were given a list of curricula and asked which of these they planned to take in high school. The options available were:

1 = Academic or college preparatory
2 = Agriculture
3 = Business or commercial
4 = General
5 = Home Economics
6 = Vocational
7 = Other
8 = Undecided.

3.3.B.2. Educational Expectations (EDEX)

In the seventh, ninth, and eleventh grade BEQ's as well as the senior year questionnaire, items were included which tapped educational goals or expectations (EDEX). In all regression analyses the available options were collapsed to a dichotomy with college coded "1" and other plans coded zero. Options differed across the BEQ versions. The actual items and options appear below.

Seventh Grade: What do you plan to do after you get out of high school?

0 = Don't know
1 = Get a full-time job or join the military service
1 = Become a housewife
1 = Other
2 = Continue my education.[8]

Ninth Grade: What do you plan to do after you get out of high school?

1 = Don't know
2 = Get a full-time job or join the military service
3 = Become a full-time housewife
4 = Attend college
5 = Other.

Eleventh Grade: Which of the following best describes them [plans]?

1 = A full-time job or the military service
2 = A 4-year college
3 = School or college other than 4-year[9]
4 = Full-time housewife
5 = Other.

Twelfth Grade: Which of the following best describes these plans?

1 = Get a full-time job
2 = Join the military service
3 = Attend a 4-year college
4 = Attend a 2-year college[10]
5 = Take training other than college
6 = Become a housewife
7 = Other.

Educational plans in the junior (EDEXJR) and senior years (EDEXSR) are available for Group 4 and AEQ youth; earlier measures are available only for GROUP 4 youth.[11]

3.3.B.3 Occupational Aspirations

As noted earlier in Chapter 2, some senior questionnaires were located for adolescents in the class of 1969 in three schools in one urban community and for youth in the class of 1965 in one school in another urban community. The first item on the senior instrument was "THOT12," (see 3.3.A.1, above) which asked students whether they had seriously considered any occupation(s) as a life's work. Youth responding in the affirmative were asked to write in the occupational title(s). These titles were also requested on the "THOT" items in the seventh, ninth, and eleventh grade versions of the BEQ; however, none of this information was coded by ETS. Occupational titles were coded by the Hopkins staff into 3-digit scores corresponding to the 1970 Census of Population Occupational Classification (U.S. Bureau of the Census, 1971), adding the following supplementary codes:

994	Housewife.
995	Answered "yes" to Senior Questionnaire 1, but listed no occupational aspiration in the blank.
996	Answered "no" to Senior Questionnaire 1, and listed no occupational aspiration in the blank.
997	Listed an uncodable (in this scheme) aspiration.
998	Took the Senior Questionnaire but left question 1 blank.

Three graduate students in the Department of Social Relations served as coders. During the first several days of practice, all three individuals coded the same aspiration data and reliability was assessed. The worst reliability obtained during that time was 5/35 disagreements (where 35 questions were coded at one time and ALL THREE individuals had to agree on the exact category of the occupation for an agreement to be recorded). It should be emphasized, however, that this 86 percent agreement was obtained during training sessions and was the lowest figure recorded at that time. Furthermore, disagreements were largely limited to one particular type -- one or more of the coders would CORRECTLY place the occupation and the other(s) would code the occupation as "997," uncodable. As their familiarity with the scheme increased, this type of disagreement decreased. Additionally, during the entire period of coding, coders were instructed to place to one side dubious cases -- instances in which more than one classification seemed appropriate. These cases were resolved by one or both of the principal investigators.

These occupational aspiration census codes were subsequently transformed into Socioeconomic Index scores (SEI scores, using the scheme in Appendix B of Hauser and Featherman, 1977) to obtain occupational status aspiration data (SEIASP). A second transformation, of job title to Holland occupational type (OCASP-R, OCASP-I, OCASP-A, OCASP-S, OCASP-E, OCASP-C), was effected through use of information provided by Gottfredson (1976, Table A). Further detail on this transformation is provided in Chapter 8, where these codes are employed.

3.3.C. Work Values

A series of six indices of work values, tapping the importance of earnings (EARNS-V), social service (SERV-V), engagement (ENGAG-V), associations (ASSOC-V), power and responsibility (POWER-V), and sinecure (SINEC-V) returns to work are constructed from 25 items included on the Adult Experiences Questionnaire. The items employed, construction procedures, and scale properties are detailed in Chapter 5, Section 1.

3.4 ACTIVITIES

One major concern of the present project involves the importance of "pre-occupational" interests during the primary and secondary grades for career development processes and outcomes. Data were collected in grades 7, 9, and 11 from the BEQ on community and school club participation, sports activity, and extra-curricular hobbies and pastimes. Additionally, those individuals responding to the "Adult Experiences Questionnaire" one and three years after high school graduation were asked to indicate participation in community activities, hobbies, and pastimes. These data will allow us to operationalize "interests" in a manner consistent with our previously presented conceptualization.

A second type of activity involves the implementation of prior plans or decisions. Examples are enrollment in a particular high school curriculum, entry into the work force, continuation of education beyond high school, application to and acceptance by college. Adolescent work experience is considered in this context also.

The present analysis focuses on work experiences early in the respondent's labor force career. Data on occupational position are available for those individuals responding to the AEQ who had entered the labor force within three years of graduation from high school. With the information gathered, it is possible to characterize an individual's work according to both the routines it involves and the rewards it confers. Work routines (i.e., Holland's typology) are measured by a series of self-reported items on work activities and tasks. Work rewards or returns are assessed through a series of items analogous to those included in the Minnesota Importance Questionnaire (Lofquist and Dawis, 1969: Appendix).

3.4.A. Pre-Occupational and Extra-Occupational Manifest Interests

Our manifest interest scales organize discretionary time utilization according to the dimensions advanced by Holland (1976): Realistic (REAL), Investigative (INVE), Artistic (ARTS), Social (SOCL), Enterprising (ENTR), and Conventional (CONV). These are measured at the seventh, ninth, and eleventh grades. Three such scales (REAL, ARTS, SOCL) also are constructed for youth three years after high school graduation. All details concerning items employed, construction techniques, and scale properties can be found in Chapter 4.

3.4.B. Implementation of Prior Plans

3.4.B.1. Curriculum Enrollment (CURR)

In the eleventh grade version of the BEQ youth were asked their course of study. The options available were as follows: 1= Academic or college preparatory; 2= Agriculture; 3= Business or commercial; 4= General; 5= Home economics; 6= Vocational; 7= Other; 8= Undecided. For use in regression analyses these options are collapsed into academic (coded "1") and other (coded "0"). A classification used in tabular presentation is the trichotomy, Academic, General/Business and Other.

3.4.B.2 Application to (APPLID) and Acceptance by (ADMITD) a College

On the senior year questionnaire youth were asked "What is the present status of your [college] plans?" Three options were available: 1= Have been accepted by at least one college; 2= Have applied for admission but have not as yet been accepted by a college; 3= Have not as yet applied for admission.

Persons responding either "1" or "2" were coded as "1" on application status (APPLID); all other persons received a zero. Persons responding "1" received a "1" on acceptance status (ADMITD); all others received a zero. This coding scheme guaranteed no missing data, a strategy justified because (1) persons who did not plan to go to college would be validly coded as "0" rather than missing and (2) our major interest was in persons scoring a "1." These measures are used in Chapter 6, Section 2.

3.4.B.3. College Enrollment Status (SCLNOW2)

Youth in the AEQ sample were asked to respond to the following question:

> If you are in school, check one statement below that best describes the kind of school it is. If you are not in school at all, check C(1).
>
> 1 = I do not go to any kind of school at all, or go less than 3 hours a week.
> 2 = I go to classes regularly at least once a week in connection with my job.
> 3 = I go to classes at least 3 hours a week for vocational training in a school that does not offer college credit (For example: a school of cosmetology, or technical training).
> 4 = I go to classes at least 3 hours a week, but not for a job or college credit.
> 5 = I go to a junior college and take less than 11 hours of classes for credit.
> 6 = I go to a junior college and take 11 hours of classes or more for credit.
> 7 = I go to a 4-year college or university and take less than 11 hours of classes for credit.
> 8 = I go to a 4-year college or university and take 11 hours of classes or more for credit.
> 9 = I am in a full-time military training program or school (on active duty).

For purposes of analysis, categories "1" through "4" and "9" were collapsed into a non-college code ("0") and categories "5" through "8" were combined into a college code ("1"). There were negligible missing data on this item.

3.4.B.4. Length of Work Week (WORKING)

All youth not in military service were asked to report on their work schedule through the following item:

> Check one of the statements below that best describes your present employment. If you are not employed because you're a student, because of sickness, because you can't find a job, or for any other reason, check A(5).
>
> 1 = I work 48 hours a week or more on one job.
> 2 = I work 48 hours a week or more on two or more jobs.
> 3 = I work at least 30 hours but less than 48 hours a week.
> 4 = I work at least 5 hours but less than 30 hours a week.
> 5 = I work less than 5 hours a week.

For purposes of analyses, this item (WORKING) was recoded as the number of hours employed. Categories "1" and "2" were coded "50"; category "3" became "38"; category "4" became "18"; and the rest of the youth were coded as working "2" hours a week. Approximately 3 percent of the youth skipped this item (legitimate and illegitimate skips combined).

3.4.B.5. Adolescent Work Experience

A series of items are used in Chapter 9, Section 1, to examine high school work experience. Parallel phrasing was used on the seventh, ninth, and eleventh grade versions of the BEQ, with only the reference years changing across instruments. The items below are taken from the ninth grade versions.

During SCHOOL VACATIONS in the last two years, have you usually had a job?

1 = No
2 = Yes, part-time
3 = Yes, full-time

NOT counting work during vacations, have you WORKED OUTSIDE OF SCHOOL during grades 9 and 10? (Don't forget jobs like your own farming, or helping your parents or guardian with their work or business.)

1 = No
2 = Grade 9 only
3 = Grade 10 only
4 = Both years

During how many months did you work?

1 = 2 months or less
2 = Between 2 and 6 months
3 = 6 months or longer

How many hours a week, on the average, did you work?

1 = 5 hours a week or less
2 = Between 5 and 20 hours
3 = 20 hours or more

3.4.C. Occupational Activity

3.4.C.1. Route to Present Job

All youth in the AEQ sample who worked at least 5 hours a week were asked to report on how they obtained their present positions by checking the most appropriate of the following options:

1 = Through a friend or relative
2 = Through someone I knew on a previous job
3 = Through high school
4 = Through another school
5 = Through a U.S., state, or other public employment agency
6 = Through a private employment agency
7 = By answering an advertisement
8 = By applying directly to a person or company I thought might hire me.

This indicator is examined in Chapter 9, Section 3.

3.4.C.2. Work Routines

All AEQ youth employed at least 20 hours a week were asked to indicate how often they performed each of 60 tasks or activities at work. These activities were factored into six clusters reflecting the six Holland occupational types. The items employed, construction procedures, and properties of the six work activity scales (WORK-R, WORK-I, WORK-A, WORK-S, WORK-E, WORK-C) are detailed in Chapter 5, Section 2.

3.4.C.3. Work Returns

Six scales are developed which tap satisfaction with the earnings (EARNS-R), social service (SERVE-R), engagement (ENGAG-R), associations (ASSOC-R), power and responsibility (POWER-R), and sinecure (SINEC-R) aspects of returns to work. These are derived from 25 items on the Adult Experience Questionnaire completed by all persons engaged in work for pay. The items employed, construction procedures, and scale properties are detailed in Chapter 5, Section 1.

3.5 METHOD OF ANALYSIS

Structural equation modeling (Goldberger, 1973) will be the principal analytic technique employed. For these recursive models, ordinary least square (OLS) is an appropriate estimation technique (Johnston, 1972:377). In structural equation modeling (commonly known as "path analysis") a model is expressed as a system of linear, additive equations, each of which includes a residual error effect that completely determines the dependent variable of interest. In recursive models, the path coefficient, the basic statistic of this analysis technique, is equivalent to a standardized regression coefficient. It assesses the direct, unmediated influence of a given independent variable on a dependent variable, with the effects of all other variables entered into the regression equation partialled out. Indirect effects implied in the model can be readily computed according to the "tracing rules" of path analysis. The techniques, assumptions, strengths and limitations of this analytic strategy are discussed in detail in a number of sources (Duncan, 1975; 1966; Goldberger, 1973; Heise, 1969; Land, 1969).

The convention of employing diagrammatic models in path analysis to summarize the flow of hypothesized causal effects (see Figure 1.3.1 inset) compels the researcher to make these causal assumptions explicit. Such diagrams are schematic representations of the system of simultaneous structural equations thought to represent the processes under consideration. The double-headed curved arrows linking exogenous, or predetermined, variables in such presentations indicate empirical relationships in which no assumptions regarding causal priorities in those relationships are being made. The statistic associated with these linkages is the simple zero-order correlation.

All other effects in the model involve the decomposition of the correlation between two variables into direct and indirect effects, and spurious effects (Alwin and Hauser, 1975; Lewis-Beck, 1974) constrained by the pattern of causal influences implied in the model.

The major scaling technique employed is exploratory factor analysis in combination with expert judgement of item utility. The extraction and rotation criteria are given in the analysis sections.

Much descriptive information also is presented in simple frequency distributions and cross-tabular arrays. Also, one-way analysis of variance sometimes is employed to test for group mean differences. These tests usually are summarized in the tables by the squared-ETA coefficient and its statistical significance.

FOOTNOTES

[1] The "Background and Experiences Questionnaire" was the source of virtually all student-reported high school data used in this research. A similar version of the BEQ was administered to students in the seventh, nintn, and eleventh grades (see Chapter 2 for the timing of data collection).

[2] The maximum sample base for these Group 4 BEQ items is 5690, the number of youth who took the eleventh grade version of the instrument. A total of 5208 non-missing responses were recorded for father's and 5335 for mother's education.

[3] In 1963, individual item missing data were not distinguished from the lowest code. Therefore, all missing data estimates for high school responses of AEQ youth reflect only the proportions who responded to available "don't know" categories. Out of 1716 youth who took the 1963 BEQ, 1517 (88 percent) supplied data on father's education and 1562 (91 percent) supplied data on mother's education.

[4] The response rate for father's occupation (based upon a sample of 5690 possible responses) was 94 percent (5341).

[5] Of the 5690 youth who took the junior year BEQ in GROUP 4, 5569 provided a response to this item (98 percent).

[6] Of the 5690 youth who took the junior year BEQ in GROUP 4, 5471 (96 percent) provided a response to this item.

[7] In the GROUP 4, eleventh grade administration the percentages of youth responding to each item were: PARS, 95; FRND, 96; TEAH, 94; COUN, 94.

[8] These are the actual codes that were used, precluding distinctions among non-college choices.

[9] Codes 2 and 3 were grouped as "college" plans.

[10] Codes 3 and 4 were grouped as "college" plans; this is less inclusive than the junior year item's codes.

[11] A total of 18 percent of the 5690 GROUP 4 juniors skipped this question; legitimate skips, youth who did not plan to graduate and were routed around this question, are included in this missing data estimate. Roughly 5450 seniors took the brief senior year questionnaire; of these 5137 (94 percent) responded to this question (persons not planning to graduate were included in the estimate of non-response).

Chapter 4 -- Pre-Occupational and Extra-Occupational Interests

This and the following chapter cut across method and substance. In them we describe the development of scales indexing and organizing dimensions of manifest interests (the present chapter) and of occupational values, routines and returns (Chapter 5). These are important tools for later relational analyses which involve selected career development issues over the school years and the first few years of work. They also are of interest in their own right, however, for what they reveal about the properties of their reference constructs: their internal structure, over-time stability, and inter-scale relations. Chapters 4 and 5 attend to both sorts of issues, presenting the nuts and bolts of instrumentation and scaling and descriptive analyses of the properties of the scales thus developed.

Attempts to discern the dimensional structure underlying interest inventories (e.g., Jackson and Williams, 1975) reveal that "a small number of factors account for most of the variance, and these major factors appear to be variations on a few major themes, such as science, people, skilled trades, business, and persuasive interests and activities" (Holland, 1976: 527). In particular, these empirical factors appear to correspond well to the Roe and Holland occupational typologies discussed in Chapter 1.

Occupational "interests" are crucial to the vocational psychology orientation to career choice. Much of the work in this literature has, as we have noted, centered on "tested" or "inventoried" interests.

However, a growing body of research and speculation suggests that "manifest" interests (Osipow, 1973:307-9) are equally important, if not more so, as influences upon occupational preferences. Lofquist and Dawis (1969:24-36) suggest that the individual's competencies and needs often are revealed through his "exhibited interest" pattern -- the discretionary activities in which the individual participates. Hence, manifest interest patterns during the school years might have considerable bearing on later vocational development.

The present project pursues this line of reasoning in tracing out the emergence of occupational preferences over the school years. In this chapter we report our procedures for isolating clusters of "manifest interests" among junior and senior high school adolescents and young persons 3 years out of high school. Our objective was to derive scales that could be interpreted consistently within the Holland scheme of occupational types. In developing these scales we consider, for high school students and graduates, the frequencies of particular activities, the structures of these activities, and the consistency of the structures over time. The next section deals with pre-occupational interests during the junior and senior high school years. This is followed by a parallel treatment of extra-occupational interests as revealed in the three-year post-high school survey. Finally, the chapter briefly considers the interrelationships among various interest domains in the cross-section and their stability over time, from grade seven to three years beyond high school.

4.1 PRE-OCCUPATIONAL MANIFEST INTERESTS OF ADOLESCENTS

The samples used in the first phase of these scaling efforts were the cross-sectional samples of seventh, ninth, and eleventh graders contacted in 1963, 1965, and 1967, respectively (GROUP 4). Due to the sketchy nature of vocational interest research on blacks and women (Holland, 1976), it seemed desirable to perform parallel rather than pooled analyses by sex/race groupings. However, as was emphasized in Chapter 2, racial information at the time that scaling work was begun was available only for eleventh graders (1967) in three large urban communities. Thus, we had to restrict the seventh and ninth grade samples to students who also were present in the 1967 cross-sectional sample so that racial information would be available for them.

In the seventh, ninth, and eleventh grades, students were administered a "Background and Experiences Questionnaire" (the "BEQ"). The instruments were practically identical across grade levels. Several sections of the instrument dealt with activities in which the student had participated during the previous two grades. The student was given three or four ordered options following each activity and was asked to choose one to indicate his or her frequency of participation in that activity. These activities included hobbies, community and school participation, reading and television-viewing practices, social behaviors and sports participation. In all, 91 activities initially were considered as candidates for entry into our "manifest interest" scales (questions 6-96 on the BEQ).

Directly below are the actual items employed in the scale construction, taken from the ninth grade version of the BEQ. The letters in parentheses are the variable abbreviations that will be used in the tables which follow.

We have included these items directly in the text to encourage the reader to review them carefully before continuing with the discussion of the scale construction procedures. The items were practically the same across the three versions of the questionnaire. Some of these items had three response options and others four, however. To approximate a common metric, items with three categories were assigned the following values: "1," "2.5," and "4." For four response-option items, the corresponding values were: "1," "2," "3," and "4."

How much time each week, on the average, have you spent watching each of the following kinds of TELEVISION programs—during grades 7 and 8? Do not include programs that were part of your school work. Do not include TV watching during school vacations.

(TV01)

6. Detective stories or mysteries

A Very little or none
B About 30 minutes a week
C Between 30 and 60 minutes a week
D Over 60 minutes a week

(TV02)

7. Westerns and adventure stories

A Very little or none
B About 30 minutes a week
C Between 30 and 60 minutes a week
D Over 60 minutes a week

(TV03)

8. Variety programs (for example, Ed Sullivan)

A Very little or none
B About 30 minutes a week
C Between 30 and 60 minutes a week
D Over 60 minutes a week

(TV04)

9. Comedy

A Very little or none
B About 30 minutes a week
C Between 30 and 60 minutes a week
D Over 60 minutes a week

(TV05)

10. Teen-age music and dancing

A Very little or none
B About 30 minutes a week
C Between 30 and 60 minutes a week
D Over 60 minutes a week

(TV06)

11. Serious drama, music, or "specials"

A Very little or none
B About 30 minutes a week
C Between 30 and 60 minutes a week
D Over 60 minutes a week

(TV07)

12. Documentaries or coverage of special events

A Very little or none
B About 30 minutes a week
C Between 30 and 60 minutes a week
D Over 60 minutes a week

(TV08)

13. Educational courses, programs, or talks

A Very little or none
B About 30 minutes a week
C Between 30 and 60 minutes a week
D Over 60 minutes a week

(TV09)

14. Quiz, panel, or audience participation shows

A Very little or none
B About 30 minutes a week
C Between 30 and 60 minutes a week
D Over 60 minutes a week

(TV10)

15. Cartoons

A Very little or none
B About 30 minutes a week
C Between 30 and 60 minutes a week
D Over 60 minutes a week

(TV11)

16. Movie features

A Very little or none
B Sometimes, but less than one a week
C About one a week
D Two or more a week

(TV12)

17. Sports events

A Very little or none
B Sometimes, but less than one a week
C About one a week
D Two or more a week

(TV13)

18. How much time each week, on the average, have you spent listening to news reports on RADIO or TV?

A Very little or none
B About 30 minutes a week
C Between 30 and 60 minutes a week
D Over 60 minutes a week

How much time each week, on the average, have you spent listening to each of the following kinds of RADIO programs or phonograph RECORDS—during grades 7 and 8?

(RR01)

19. Popular music

A Very little or none
B About 30 minutes a week
C Between 30 and 60 minutes a week
D Over 60 minutes a week

(RR02)

20. Classical or serious music

A Very little or none
B About 30 minutes a week
C Between 30 and 60 minutes a week
D Over 60 minutes a week

(RR03)

21. During school vacations, how much do you watch TV and listen to the radio or records?

A Less than during school terms
B About the same as during school terms
C More than during school terms

During grades 7 and 8, how much time, on the average, have you spent on each of the following? Mark A, B, or C on your answer sheet.

If you answer a starred (*) choice, fill in the blank in this test book.

Do not count things you did as part of your class assignments.

(HB01)

22. Repairing mechanical things, such as appliances, cars

A None or very little
B Some, but less than 2 hours a week*
C 2 hours a week or more*

*Name one ______________________

(HB02)

23. Sewing, embroidering, knitting

A None or very little
B Some, but less than 2 hours a week*
C 2 hours a week or more*

*Name one piece ______________________

(HB03)

24. Experimenting with new recipes

A None or very little
B Some, but less than 2 hours a week
C 2 hours a week or more

(HB04)

25. Working on collections, such as rocks, stamps

A None or very little
B Some, but less than 2 hours a week*
C 2 hours a week or more*

*What do you collect? ______________________

(HB05)

26. Building electronic equipment or performing scientific experiments at home

A None or very little
B Some, but less than 2 hours a week*
C 2 hours a week or more*

*Name one ______________________

(HB06)

27. Model building; for example, airplanes

A None or very little
B Some, but less than 2 hours a week*
C 2 hours a week or more*

*What kind? ______________________

(HB07)

28. Refinishing or building things at home (woodwork, etc.)

A None or very little
B Some, but less than 2 hours a week*
C 2 hours a week or more*

*Name one thing ______________________

(HB08)

29. Taking or developing pictures

A None or very little
B Some, but less than 2 hours a week
C 2 hours a week or more

(HB09)

30. Painting, drawing, or sculpturing

A None or very little
B Some, but less than 2 hours a week*
C 2 hours a week or more*

*Name one subject________________________

(HB10)

31. Practicing, arranging, or composing music

A None or very little
B Some, but less than 2 hours a week*
C 2 hours a week or more*

*What instrument or style?__________________

(HB11)

32. Writing poetry, plays, essays, or stories

A None or very little
B Some, but less than 2 hours a week*
C 2 hours a week or more*

*Give one title____________________________

(HB12)

33. Writing letters to friends or relatives

A None or very little
B Some, but less than 2 hours a week
C 2 hours a week or more

(HB13)

34. Taking care of younger brothers or sisters

A None or very little
B Some, but less than 2 hours a week
C 2 hours a week or more

(HB14)

35. Cleaning house

A None or very little
B Some, but less than 2 hours a week
C 2 hours a week or more

(HB15)

36. Cooking for the family

A None or very little
B Some, but less than 2 hours a week
C 2 hours a week or more

(HB16)

37. Riding around on a bicycle

A None or very little
B Some, but less than 2 hours a week
C 2 hours a week or more

(HB17)

38. Riding around on a motorcycle

A None or very little
B Some, but less than 2 hours a week
C 2 hours a week or more

(HB18)

39. Playing individual sports, such as bowling, pool, or swimming

A None or very little
B Some, but less than 2 hours a week
C 2 hours a week or more

(HB19)

40. Practicing sports on your own

A None or very little
B Some, but less than 2 hours a week*
C 2 hours a week or more*

*What?__________________________________

(HB20)

41. Hunting, fishing, hiking, or camping

A None or very little
B Some, but less than 2 hours a week
C 2 hours a week or more

(HB21)

42. Playing outdoor group sports (not on a regular team)

A None or very little
B Some, but less than 2 hours a week
C 2 hours a week or more

(HB22)

43. Playing indoor table or card games

A None or very little
B Some, but less than 2 hours a week
C 2 hours a week or more

During grades 7 and 8, how often, on the average, have you done each of the following?

If you answer a starred (*) choice, fill in the blank.

(HB23)

44. Attended club meetings

A Less than once a month
B Between once a week and once a month*
C Once a week or more often*

*Name one club______________________________

(HB24)

45. Attended church social meetings

A Less than once a month
B Between once a week and once a month
C Once a week or more often

(HB25)

46. Attended athletic events

A Less than once a month
B Between once a week and once a month
C Once a week or more often

(HB26)

47. Attended movies

A Less than once a month
B Between once a week and once a month
C Once a week or more often

(HB27)

48. Gone roller or ice skating

A Less than once a month
B Between once a week and once a month
C Once a week or more often

(HB28)

49. Attended dances

A Less than once a month
B Between once a week and once a month
C Once a week or more often

(HB29)

50. Gone on dates

A Less than once a month
B Between once a week and once a month
C Once a week or more often

How much time, on the average, have you spent on each of the following?

(HB30)

51. Riding around in cars

A Less than 1 hour a week
B 1 to 2 hours a week
C More than 2 hours a week

(HB31)

52. Hanging around, just loafing, talking, or snacking with friends

A Less than 1 hour a week
B 1 to 2 hours a week
C More than 2 hours a week

(HB32)

53. Doing personal shopping

A Less than 1 hour a week
B 1 to 2 hours a week
C More than 2 hours a week

(HB33)

54. Going window shopping or just looking in stores

A Less than 1 hour a week
B 1 to 2 hours a week
C More than 2 hours a week

(HB34)

55. Going to the store for the family

A Less than 1 hour a week
B 1 to 2 hours a week
C More than 2 hours a week

(HB35)

56. Taking care of your hair (washing, combing, setting, etc.)

A Less than 1 hour a week
B 1 to 2 hours a week
C More than 2 hours a week

(HB36)

57. Other personal grooming (complexion, nails, etc.)

A Less than 1 hour a week
B 1 to 2 hours a week
C More than 2 hours a week

(HB37)

58. Taking care of your clothes

A Less than 1 hour a week
B 1 to 2 hours a week
C More than 2 hours a week

(HB38)

59. How long, on the average, have you spent talking on the telephone to friends each day?

A Less than 10 minutes a day
B Between 10 and 30 minutes a day
C Over 30 minutes a day

During grades 7 and 8, how many times have you done each of the following?

If you answer a starred (*) choice, fill in the blank in this test book.

Do not count things you did as part of your class assignments.

(HB39)

60. Gone to plays, lectures, concerts, etc., outside of school

A None
B 1 or 2 times*
C More than 2 times*

*Name one____________________

(HB40)

61. Acted in plays, done play production work, or participated in public debates

A None
B 1 or 2 times*
C More than 2 times*

*Name one play or debate topic____________

(HB41)

62. Made solo musical performances or public speeches

A None
B 1 or 2 times*
C More than 2 times*

*Name one occasion________________

(HB42)

63. Been a baby sitter

A None
B 1 or 2 times
C More than 2 times

During grades 7 and 8, have you been a member of a musical organization—either in or out of school?

(HB43)

64. Band, orchestra, or other instrumental group

A No
B 1 year*
C 2 years*

*What did you do?________________

(HB44)

65. Chorus, glee club, or other vocal group

A No
B 1 year*
C 2 years*

*What part?____________________

Have you played on athletic teams—either in or out of school?

(HB45)

66. Football

A No
B 1 year*
C 2 years*

*What position?________________

(HB46)

67. Basketball

A No
B 1 year*
C 2 years*

*What position?________________

(HB47)

68. Baseball

A No
B 1 year*
C 2 years*

*What position?________________

(HB48)

69. Track

A No
B 1 year*
C 2 years*

*What event?________________

(HB49)

70. Other athletic team

A No
B 1 year*
C 2 years*

*Name____________________

(HB50)

71. During grades 7 and 8, have you been a member of a cheering or pep squad?

A No
B 1 year
C 2 years

(HB51)

72. During grades 7 and 8, how many school or class committees have you worked on?

A None
B 1 or 2*
C More than 2*

*What kind?____________________________

During grades 7 and 8, have you worked on a newspaper, yearbook, or other publication?

(HB52)

73. Newspaper

A No
B 1 year*
C 2 years*

*What job?____________________________

(HB53)

74. Yearbook

A No
B 1 year*
C 2 years*

*What job?____________________________

(HB54)

75. Other publication

A No
B 1 year*
C 2 years*

*What?____________________________

How many BOOKS of the following kinds have you read during the last two years? Do not include class assignments.

(RD01)

76. History, current events, biography, autobiography

A None
B 1 or 2*
C More than 2*

*Name one title____________________________

(RD02)

77. Books telling how to repair, build, or do things

A None
B 1 or 2*
C More than 2*

*Name one title____________________________

(RD03)

78. Religious books

A None
B 1 or 2*
C More than 2*

*Name one title____________________________

(RD04)

79. Sports, romance, mystery, adventure

A None
B 1 or 2*
C More than 2*

*Name one title____________________________

(RD05)

80. Science

A None
B 1 or 2*
C More than 2*

*Name one title____________________________

(RD06)

81. Music, art

A None
B 1 or 2*
C More than 2*

*Name one title____________________________

(RD07)

82. Classical or best seller fiction, poetry, drama

A None
B 1 or 2*
C More than 2*

*Name one title____________________________

How often, on the average, have you read each of the following kinds of MAGAZINES?

(RD08)

83. Teen-age magazines, such as Seventeen, Boys Life

A Rarely or never
B Occasionally*
C Regularly*

*Name one magazine____________________________

(RD09)

84. Movie or TV

A Rarely or never
B Occasionally*
C Regularly*

*Name one magazine____________________________

(RD10)

85. Detective, sports, romance, adventure, mystery, western stories

A Rarely or never
B Occasionally*
C Regularly*

*Name one magazine______________________

(RD11)

86. Comic books

A Rarely or never
B Occasionally*
C Regularly*

*Name one______________________

(RD12)

87. Hot rod, mechanical, science fiction

A Rarely or never
B Occasionally*
C Regularly*

*Name one______________________

(RD13)

88. Outdoor or sports, such as Sports Illustrated

A Rarely or never
B Occasionally*
C Regularly*

*Name one______________________

(RD14)

89. Men's or women's magazines, home and garden, fashion

A Rarely or never
B Occasionally*
C Regularly*

*Name one______________________

(RD15)

90. News, digest, and general magazines, such as Reader's Digest, Life, Look, Newsweek, Saturday Evening Post

A Rarely or never
B Occasionally*
C Regularly*

*Name one______________________

(RD16)

91. Scientific magazines, such as National Geographic

A Rarely or never
B Occasionally*
C Regularly*

*Name one______________________

(RD17)

92. Literary magazines, such as Atlantic Monthly

A Rarely or never
B Occasionally*
C Regularly*

*Name one______________________

How often have you read each of the following sections of a NEWSPAPER?

(RD18)

93. Comics

A Rarely or never
B Occasionally
C Regularly

(RD19)

94. Sports

A Rarely or never
B Occasionally
C Regularly

(RD20)

95. Society, homemaking

A Rarely or never
B Occasionally
C Regularly

(RD21)

96. News, editorials

A Rarely or never
B Occasionally
C Regularly

4.1.A. Adolescent Activities in Grades 7-11

Our objective initially was to see if the patterning of these responses would conform, if only roughly, to the six areas of pre-occupational interest that are suggested by Holland's classification scheme. We first, therefore, had to determine which of our 91 items were reasonable candidates to distinguish among these groups of interests. Each of the 91 questionnaire items was typed on an index card, exactly as it appears in the text above. The cards were shuffled and four judges (all intimately acquainted with the RIASEC typology; see note C to Table 4.1.1) independently sorted the cards into seven piles. The first six categories were the six Holland occupational interest groups (Realistic, Investigative, Artistic, Social, Enterprising, and Conventional). If a judge thought that a particular item was "worthless as a criterion for distinguishing among the six Holland types," it was to be placed in the seventh pile (W).

The results of this sorting task are reported in Table 4.1.1 below (see note b, Table 4.1.1 for the decision rules employed to resolve discrepant ratings). According to the experts' judgements of the item content, Realistic, Artistic, and Social interests were well represented in the 91 items included in the BEQ. Enterprising, Conventional, and Investigative interests were poorly represented. In all, 45 items were deemed worthless for distinguishing among the six Holland types; 46 were retained as being useful. The retained items represent some passive activities, such as reading (RD), musical (RR), and television-viewing (TV) preferences, but largely reflect more active involvements in hobbies, club, sport, and social participation (HB).

Table 4.1.1 Judges' Ratings of Items Included in the Behavior and Experiences Questionnaire on the Basis of the Item's Perceived Ability to Distinguish Between Typologies of Pre-Occupational Interests ("R","I","A","S","E","C")

ITEM CONTENT	CODE	JUDGE 1	JUDGE 2	JUDGE 3	JUDGE 4	RATING[a,b,c]
Hunting, fishing, hiking, or camping	HB20	R	R	R	R	R
Read sports section in newspaper	RD19	R	R	R	R	R
Refinishing or building things at home (woodwork, etc.)	HB07	R	R	R	R	R
Repairing mechanical things, such as appliances, cars	HB01	R	R	R	R	R
Read hot rod, mechanical, science fiction magazines	RD12	R	W	R	R	R
Read outdoor or sports magazines	RD13	R	R	R	W	R
Model Building, for example airplanes	HB06	I	R	R	R	R
Read books telling how to repair, build, or do things	RD02	R	I	R	R	R
Played on (miscellaneous) athletic teams	HB49	R	W	R	W	R
Riding around on a motorcycle	HB17	W	R	R	W	R
Read scientific magazines like NATIONAL GEOGRAPHIC	RD16	I	I	I	I	I
Read science books	RD05	I	I	I	I	I
Building electronic equipment ; science experiments	HB05	I	I	R	I	I
Watch educational programs, courses or talks on TV	TV08	I	W	W	I	I
Listen to classical or serious music	RR02	A	A	A	A	A
Member of band, orchestra, instrumental group	HB43	A	A	A	A	A
Writing poetry, plays, essays, or stories	HB11	A	A	A	A	A
Member of chorus, glee club, vocal group	HB44	A	A	A	A	A
Read music, art books	RD06	A	A	A	A	A
Painting, drawing, or sculpturing	HB09	A	A	A	A	A
Acted in plays, done play production work, debated	HB40	A	A	A	A	A
Gone to plays, lectures, concerts outside of school	HB39	A	A	A	A	A
Read classical or best seller fiction, poetry, drama	RD07	A	A	A	A	A
Practicing, arranging, or composing music	HB10	A	A	A	A	A
Read literary magazines like ATLANTIC MONTHLY	RD17	A	A	A	A	A
Worked on newspaper	HB52	A	A	A	C	A
Worked on (miscellaneous) publication	HB54	A	A	A	C	A
Made solo musical performances or public speeches	HB41	A	E	A	A	A
Watched serious drama, music, or "specials" on TV	TV06	A	W	A	A	A
Read religious books	RD03	S	S	S	S	S
Taking care of younger brothers and sisters	HB13	S	S	S	S	S
Been a baby sitter	HB42	S	S	S	S	S
Attended dances	HB28	S	S	S	S	S
Attended club meetings	HB23	S	S	S	S	S

Table 4.1.1 (continued)

ITEM CONTENT	CODE	JUDGE 1	JUDGE 2	JUDGE 3	JUDGE 4	RATING
Attended church social meetings	HB24	S	S	S	S	S
Talking on the telephone to friends each day	HB38	S	S	S	S	S
Writing letters to friends or relatives	HB12	S	S	S	S	S
Read society, homemaking sections in newspaper	RD20	C	S	S	S	S
Experimenting with new recipes	HB03	C	S	S	S	S
Cooking for the family	HB15	C	S	S	S	S
Gone on dates	HB29	S	E	S	S	S
Hanging around, just loafing with friends	HB31	S	W	W	S	S
Read books in history, current events, biography	RD01	E	E	E	E	E
Doing personal shopping	HB32	W	W	E	E	E
Sewing, embroidering, knitting	HB02	C	A	C	C	C
Cleaning house	HB14	C	S	C	C	C
Practicing sports on your own	HB19	W	W	W	W	W
Read detective, sports, romance, mystery magazines	RD10	W	W	W	W	W
Watched movie features on TV	TV11	W	W	W	W	W
Watched quiz,panel, audience participation shows on TV	TV09	W	W	W	W	W
Going window shopping or just looking in stores	HB33	W	W	W	W	W
Riding around on a bicycle	HB16	W	W	W	W	W
Read teenage magazines like SEVENTEEN, BOY'S LIFE	RD08	W	W	W	W	W
Watched variety programs (like Ed Sullivan) on TV	TV03	W	W	W	W	W
Gone roller or ice skating	HB27	W	W	W	W	W
How much do you watch TV, listen to radio or records	RR03	W	W	W	W	W
Listen to popular music on radio or records	RR01	W	W	W	W	W
Read Movie or TV magazines	RD09	W	W	W	W	W
Read comics section in newspaper	RD18	W	W	W	W	W
Watched cartoons on TV	TV10	W	A	W	W	W
Read comic books	RD11	W	A	W	W	W
Watched comedy programs on TV	TV04	W	A	W	W	W
Playing individual sports like bowling, pool, swimming	HB18	W	R	W	W	W
Played on football team	HB45	R	W	W	W	W
Played on track team	HB48	W	W	R	W	W
Attended movies	HB26	W	W	W	S	W
Watched westerns, adventure stories on TV	TV02	W	W	R	W	W
Playing indoor table or card games	HB22	C	W	W	W	W
Played on basketball team	HB46	R	W	W	W	W
Played on baseball team	HB47	R	W	W	W	W
Watched detective stories or mysteries on TV	TV01	I	W	W	W	W

Table 4.1.1 (continued)

ITEM CONTENT	CODE	JUDGE 1	JUDGE 2	JUDGE 3	JUDGE 4	RATING
Read sports,romance,mystery,adventure books	RD04	W	W	R	W	W
Attended athletic events	HB25	W	W	W	S	W
Watched teenage music and dancing on TV	TV05	W	W	S	W	W
Playing outdoor group sports (not on regular team)	HB21	R	W	W	S	W
Read men's or women's magazines, home & garden,fashion	RD14	C	S	W	W	W
Riding around in cars	HB30	W	W	R	S	W
Watched sports events on TV	TV12	W	R	W	S	W
Read news, digest, general magazines (LIFE, LOOK)	RD15	E	I	W	E	W
Watched news reports on TV, listen to news on radio	TV13	E	I	W	E	W
(Miscellaneous) personal grooming (complexion, nails)	HB36	E	S	A	C	W
Taking care of your hair (washing,combing,setting)	HB35	E	S	A	C	W
Going to the store for the family	HB34	W	S	S	C	W
Working on collections, such as rocks or stamps	HB04	W	C	I	C	W
Taking care of your clothes	HB37	E	W	S	C	W
Watched documentaries or special events on TV	TV07	I	W	A	I	W
Read news, editorial sections in newspaper	RD21	E	I	I	E	W
Worked on school or class committees	HB51	E	E	S	S	W
Taking or developing pictures	HB08	A	I	R	A	W
Worked on yearbook	HB53	E	A	A	C	W
Member of pep or cheering squad	HB50	S	E	C	C	W

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[a] R=Realistic; I=Investigative; A=Artistic; S=Social; E=Enterprising; C=Conventional; W=Worthless for distinguishing

[b] Each of four judges rated the items above. Each item was typed on an index card, and the judges sorted them onto a chart containing large blocks labelled "R", "I", "A", "S", "E", "C", and "W." The final rating for the item was obtained in the following manner: (1) if all four judges agreed exactly on the item's classification it was given that classification; (2) if three of the four judges agreed exactly on the item's classification, it was given that classification; (3) if two judges agreed exactly that the item should be rated "R", "I", "A", "S", or "C" and two other judges rated it "W" it was given the "non-W" agreed upon classification; (4) other circumstances resulted in the item's classification being "W" and the item was omitted from further factor analyses. Items are grouped above by final assignment, and in descending order of certainty within each group.

[c] Judges were Linda Gottfredson, Gary Gottfredson, John Holland, and Martha Cook.

In thinking about adolescent interests and activities of this sort we expected the more active pursuits to be more popular than those of a more passive nature. Adolescents' actual patterns of time allocation and activity preferences are suggested in the simple descriptive statistics for these "active" items (the 54 common to all three versions of the BEQ). For all activities in this group, scores could range from 1.00 to 3.00 (the adjustment of a 3 to 4 point scale was not employed for these purposes).

Of the seven activities in which the average participation among seventh graders was above "2" (that is, between "some but less than two hours a week" and "2 hours a week or more" -- the highest category), only one, housecleaning, was considered by our judges to be indicative of a pre-occupational interest relevant to the Holland typology (see Table 4.1.2). In general, then, seventh graders were frequently engaged in activities which theory suggests do not differentiate among occupational predispositions. By the ninth grade (see Table 4.1.3), the picture had not changed radically. Social and occupationally irrelevant interests still dominate the participation hierarchy. In fact, by the eleventh grade (see Table 4.1.4), adolescents have reduced even further their participation in RIASEC-relevant activities, other than Social ones. According to these distributions of activity level, adolescents seemingly invest, on the average, very little time in undertakings that would help them develop interests and test skills relevant to the occupational world.

Table 4.1.2 Pre-Occupational Interests of Seventh Graders -- Item Means, Standard Deviations, Rank Order of Item Mean and Standard Deviation, Case Base for Item Statistics, and Holland Occupational Interest Code

PRE-OCCUPATIONAL INTEREST AND VARIABLE ABBREVIATION		Item Mean	RANK Mean	Item S.D.	RANK S.D.	Item N	RIASEC Code
Cleaning house	SVHB14	2.2358	1	.7345	24	2812	C
Riding around on a bicycle	SVHB16	2.2720	2	.7874	17	2812	W
Playing individual sports, such as bowling, pool, or swimming	SVHB18	2.2091	3	.7706	19	2812	W
Playing outdoor group sports (not on a regular team)	SVHB21	2.1177	4	.7675	20	2812	W
Taking care of your clothes	SVHB37	2.0807	5	.7626	21	2812	W
Riding around in cars	SVHB30	2.0715	6	.8313	7	2812	W
Taking care of your hair (washing, combing, setting, etc.)	SVHB35	2.0661	7	.8315	6	2812	W
Served on the school safety patrol	SVHB42	1.9886	8	.8970	1	2812	S
Practicing sports on your own	SVHB19	1.9417	9	.8135	11	2812	W
Worked on class committees	SVHB51	1.8976	10	.8065	14	2812	S
Taking care of younger brothers or sisters	SVHB13	1.8826	11	.8555	4	2812	S
Attended church social meetings	SVHB24	1.8759	12	.8597	3	2812	S
Going to the store for the family	SVHB34	1.8503	13	.8029	15	2812	W
Hanging around, just loafing, talking, or snacking with friends	SVHB31	1.8403	14	.8181	8	2812	S
Playing indoor table or card games	SVHB22	1.8190	15	.6953	29	2812	W
Hunting, fishing, hiking, or camping	SVHB20	1.7429	16	.8009	16	2812	R
Attended athletic events	SVHB25	1.7319	17	.8152	9	2812	W
Attended movies	SVHB26	1.6970	18	.7107	25	2812	W
Other personal grooming (complexion, nails, etc.)	SVHB36	1.6910	19	.7713	18	2812	W
Attended club meetings	SVHB23	1.6739	20	.8721	2	2812	S
Writing letters to friends or relatives	SVHB12	1.6682	21	.6294	39	2812	S
Played on a baseball team	SVHB47	1.6511	22	.8331	5	2812	W
Been a member of a chorus, glee club, or other vocal group	SVHB44	1.6454	23	.8146	10	2812	A
Gone to plays, lectures, concerts, etc., outside of school	SVHB39	1.5950	24	.7468	23	2812	A
Cooking for the family	SVHB15	1.5935	25	.7073	26	2812	S
Doing painting, drawing, or sculpture	SVHB09	1.5885	26	.7065	27	2812	A
Been a member of a band, orchestra, or other instrumental group	SVHB43	1.5647	27	.8089	13	2812	A

Table 4.1.2 (continued)

PRE-OCCUPATIONAL INTEREST AND VARIABLE ABBREVIATION		Item Mean	RANK Mean	Item S.D.	RANK S.D.	Item N	RIASEC Code
Gone roller or ice skating	SVHB27	1.5619	28	.7611	22	2812	W
Practicing, arranging, or composing music	SVHB10	1.5519	29	.8094	12	2812	A
Talking on the telephone to friends (each day)	SVHB38	1.5420	30	.6774	35	2812	S
Working on collections, such as rocks, stamps	SVHB04	1.5356	31	.6923	31	2812	W
Experimenting with new recipes	SVHB03	1.4986	32	.6756	36	2812	S
Sewing, embroidering, knitting	SVHB02	1.4680	33	.6790	34	2812	C
Going window shopping or just looking in stores	SVHB33	1.4634	34	.6688	37	2812	W
Model building; for example, airplanes	SVHB06	1.4602	35	.6967	28	2812	R
Acted in plays, done play production work, or participated in public debates	SVHB40	1.4523	36	.6942	30	2812	A
Doing personal shopping	SVHB32	1.4406	37	.6515	38	2812	E
Attended dances	SVHB28	1.3940	38	.6799	33	2812	S
Taking or developing pictures	SVHB08	1.3855	39	.5671	44	2812	W
Played on a football team	SVHB45	1.3703	40	.6904	32	2811	W
Made solo musical performances or public speeches	SVHB41	1.3193	41	.6259	40	2812	A
Played on a basketball team	SVHB46	1.2909	42	.6053	41	2812	W
Repairing mechanical things, such as appliances, cars	SVHB01	1.2738	43	.5793	42	2812	R
Playing games like "war" or "spacemen"	SVHB17	1.2713	44	.5658	45	2812	W
Refinishing or building things at home (woodwork, etc.)	SVHB07	1.2692	45	.5490	46	2812	R
Writing poetry, plays, essays, or stories	SVHB11	1.2674	46	.5378	48	2812	A
Played on any other athletic team	SVHB49	1.2486	47	.5750	43	2812	A
Building electronic equipment or performing scientific experiments at home	SVHB05	1.2351	48	.5433	47	2812	I
Played on a track team	SVHB48	1.1860	49	.4975	49	2812	W
Worked on a newspaper	SVHB52	1.1782	50	.4333	50	2812	A
Gone on dates	SVHB29	1.1198	51	.4074	51	2812	S
Been a member of a cheering or pep squad	SVHB50	1.1124	52	.3756	52	2812	W
Worked on any other publication	SVHB54	1.0526	53	.2708	53	2812	A
Worked on a yearbook	SVHB53	1.0283	54	.2089	54	2812	W

Table 4.13 Pre-Occupational Interests of Ninth Graders -- Item Means, Standard Deviations, Rank Order Of Item Mean and Standard Deviation, Case Base for Item Statistics, and Holland Occupational Interest Code

PRE-OCCUPATIONAL INTEREST AND VARIABLE ABBREVIATION		Item Mean	RANK Mean	Item S.D.	RANK S.D.	Item N	RIASEC Code
Been a baby sitter	NIHB42	2.3638	1	.8168	7	3807	S
Cleaning house	NIHB14	2.3141	2	.7211	26.5	3804	C
Playing individual sports, such as bowling, pool, or swimming	NIHB18	2.2403	3	.7600	19	3808	W
Taking care of your clothes	NIHB37	2.2300	4	.7378	24	3808	W
Taking care of your hair (washing, combing, setting, etc.)	NIHB35	2.2259	5	.8198	5	3803	W
Hanging around, just loafing, talking, or snacking with friends	NIHB31	2.1480	6	.8162	8	3797	S
Riding around in cars	NIHB30	2.0985	7	.8256	4	3797	W
Playing outdoor group sports (not on a regular team)	NIHB21	1.9895	8	.7896	15	3808	W
Other personal grooming (complexion, nails, etc.)	NIHB36	1.9582	9	.7946	14	3300	W
Practicing sports on your own	NIHB19	1.9091	10	.8328	3	3795	W
Taking care of younger brothers or sisters	NIHB13	1.8998	11	.8682	1	3802	S
Attended athletic events	NIHB25	1.8911	12	.8083	9	3801	W
Talking on the telephone to friends (each day)	NIHB38	1.8663	13	.7797	17	3806	S
Playing indoor table or card games	NIHB22	1.8359	14	.7032	29	3808	W
Attended church social meetings	NIHB24	1.8112	15	.8435	2	3802	S
Writing letters to friends or relatives	NIHB12	1.7605	16	.6563	36	3808	S
Attended dances	NIHB28	1.7594	17	.7999	13	3799	S
Riding around on a bicycle	NIHB16	1.7581	18	.8033	10	3807	W
Going to the store for the family	NIHB34	1.7483	19	.7823	16	3806	W
Cooking for the family	NIHB15	1.6941	20	.7499	22	3808	S
Hunting, fishing, hiking, or camping	NIHB20	1.6436	21	.7776	18	3807	R
Worked on school or class committees (how many)	NIHB51	1.6303	22	.7503	21	3790	S
Attended movies	NIHB26	1.6238	23	.6741	34	3806	W
Doing personal shopping	NIHB32	1.6104	24	.6942	30	3804	E
Played on a baseball team	NIHB47	1.5722	25	.8188	6	3789	W
Attended club meetings	NIHB23	1.5674	26	.8028	11	3761	S
Practicing, arranging, or composing music	NIHB10	1.5276	27	.8000	12	3789	A
Gone to plays, lectures, concerts, etc., outside of school	NIHB39	1.5005	28	.7158	28	3798	A
Gone roller or ice skating	NIHB27	1.4920	29	.7211	26.5	3801	W
Gone window shopping or just looking in stores	NIHB33	1.4882	30	.6663	35	3804	W

Table 4.1.3 (continued)

PRE-OCCUPATIONAL INTEREST AND VARIABLE ABBREVIATION		Item Mean	RANK Mean	Item S.D.	RANK S.D.	Item N	RIASEC Code
Experimenting with new recipes	NIHB03	1.4844	31	.6514	37	3805	S
Been a member of a chorus, glee club, or other vocal group	NIHB44	1.4793	32	.7537	20	3795	A
Sewing, embroidering, knitting	NIHB02	1.4785	33	.6876	32	3791	C
Painting, drawing, or sculpturing	NIHB09	1.4701	34	.6754	33	3799	A
Played on a basketball team	NIHB46	1.4194	35	.7257	25	3796	W
Been a member of a band, orchestra, or other instrumental group	NIHB43	1.4110	36	.7482	23	3798	A
Taking or developing pictures	NIHB08	1.3884	37	.5545	45	3808	W
Played on a football team	NIHB45	1.3572	38	.6882	31	3796	W
Working on collections, such as rocks, stamps	NIHB04	1.3564	39	.6020	41	3791	W
Gone on dates	NIHB29	1.3316	40	.6310	38	3784	S
Repairing mechanical things, such as appliances, cars	NIHB01	1.3314	41	.6129	40	3781	R
Model building; for example, airplanes	NIHB06	1.3257	42	.5914	42	3798	R
Played on any other athletic team	NIHB49	1.2733	43	.6158	39	3801	R
Made solo musical performances or public speeches	NIHB41	1.2630	44	.5878	43	3799	A
Refinishing or building things at home (woodwork, etc.)	NIHB07	1.2613	45	.5316	47	3800	R
Acted in plays, done play production work, or participated in public debates	NIHB40	1.2478	46	.5464	46	3802	A
Played on a track team	NIHB48	1.2394	47	.5682	44	3797	W
Riding around on a motorcycle	NIHB17	1.2035	48	.5061	48	3809	R
Building electronic equipment or performing scientific experiments at home	NIHB05	1.1872	49	.4903	49	3788	I
Writing poetry, plays, essays, or stories	NIHB11	1.1775	50	.4516	50	3802	A
Been a member of a cheering or pep squad	NIHB50	1.1214	51	.3877	51	3805	W
Worked on a newspaper	NIHB52	1.1149	52	.3673	52	3796	A
Worked on any other publication	NIHB54	1.0400	53	.2374	53	3798	A
Worked on a yearbook	NIHB53	1.0166	54	.1505	54	3797	W

Table 4.1.4 Pre-Occupational Interests of Eleventh Graders -- Item Means, Standard Deviations, Rank Order of Item Mean and Standard Deviation, Case Base for Item Statistics, and Holland Occupational Interest Code

PRE-OCCUPATIONAL INTEREST AND VARIABLE ABBREVIATION		Item Mean	RANK Mean	Item S.D.	RANK S.D.	Item N	RIASEC Code
Taking care of your hair (washing, combing, setting, etc.)	ELHB35	2.3415	1	.7876	14	4088	W
Riding around in cars	ELHB30	2.3068	2	.8011	5	4084	W
Hanging around, just loafing, talking or snacking with friends	ELHB31	2.2897	3	.7929	12	4083	S
Cleaning house	ELHB14	2.2660	4	.7719	16	4090	C
Taking care of your clothes	ELHB37	2.2608	5	.7509	19	4092	W
Playing individual sports, such as bowling, pool, or swimming	ELHB18	2.1938	6	.7643	18	4091	W
Other personal grooming (complexion, nails, etc.)	ELHB36	2.1860	7	.7751	15	4092	W
Attended athletic events	ELHB25	2.0986	8	.7986	9	4089	W
Talking on the telephone to friends (each day)	ELHB38	2.0581	9	.7997	7	4095	S
Attended dances	ELHB28	1.9376	10	.7978	10	4088	S
Gone on dates	ELHB29	1.8935	11	.8260	3	4085	S
Writing letters to friends or relatives	ELHB12	1.8678	12	.7166	26	4093	S
Practicing sports on your own	ELHB19	1.8571	13	.8525	2	4086	W
Playing outdoor group sports (not on a regular team)	ELHB21	1.8531	14	.7989	8	4092	W
Playing indoor table or card games	ELHB22	1.8129	15	.7161	27	4094	W
Taking care of younger brothers or sisters	ELHB13	1.7989	16	.8673	1	4092	S
Cooking for the family	ELHB15	1.7544	17	.7942	11	4096	S
Attended church social meetings	ELHB24	1.7226	18	.8229	4	4084	S
Doing personal shopping	ELHB32	1.6694	19	.7054	29	4092	E
Going to the store for the family	ELHB34	1.6472	20	.7482	21	4093	W
Attended club meetings	ELHB23	1.6379	21	.8002	6	4057	S
Gone to plays, lectures, concerts, etc., outside of school	ELHB39	1.6194	22	.7702	17	4086	A
Hunting, fishing, hiking, or camping	ELHB20	1.5763	23	.7503	20	4093	R
Attended movies	ELHB26	1.5661	24	.6632	33	4091	W
Worked on school or class committees	ELHB51	1.5370	25	.7208	24	4084	S
Practicing, arranging, or composing music	ELHB10	1.5100	26	.7877	13	4088	A

Table 4.1.4 (continued)

PRE-OCCUPATIONAL INTEREST AND VARIABLE ABBREVIATION		Item Mean	RANK Mean	Item S.D.	RANK S.D.	Item N	RIASEC Code
Sewing, embroidering, knitting	ELHB02	1.5045	27	.7361	23	4079	C
Going window shopping or just looking in stores	ELHB33	1.4623	28	.6524	34.5	4093	W
Experimenting with new receipes	ELHB03	1.4543	29	.6395	38	4088	S
Served as a counselor or leader for young children	ELHB42	1.4336	30	.7435	22	4091	S
Taking or developing pictures	ELHB08	1.4124	31	.5731	43	4093	W
Been a member of a chorus, glee club, or other vocal group	ELHB44	1.4093	32	.7181	25	4090	A
Painting, drawing, sculpturing	ELHB09	1.3990	33	.6660	32	4085	A
Played on a baseball team	ELHB47	1.3934	34	.7117	28	4085	W
Repairing mechanical things, such as appliances, cars	ELHB01	1.3661	35	.6515	36	4078	R
Played on a basketball team	ELHB46	1.3615	36	.6700	31	4083	W
Gone roller or ice skating	ELHB27	1.3612	37	.6524	34.5	4086	W
Been a member of a band, orchestra, or other instrumental group	ELHB43	1.3407	38	.6944	30	4086	A
Played on any other athletic team	ELHB49	1.3260	39	.6409	37	4086	R
Riding around on a motorcycle	ELHB17	1.3144	40	.6151	40	4094	R
Played on a football team	ELHB45	1.2978	41	.6235	39	4087	W
Riding around on a bicycle	ELHB16	1.2911	42	.5750	42	4092	W
Made solo musical performances or public speeches	ELHB41	1.2789	43	.6087	41	4087	A
Refinishing or building things at home (woodwork, etc.)	ELHB07	1.2724	44	.5530	44	4090	R
Played on a track team	ELHB48	1.2169	45	.5310	45	4089	W
Writing poetry, plays, essays, or stories	ELHB11	1.2166	46.5	.5078	47	4085	A
Working on collections, such as rocks, stamps	ELHB04	1.2166	46.5	.4982	48	4077	W
Acted in plays, done play production work, or participated in public debates	ELHB40	1.2074	48	.5122	46	4088	A
Model building; for example, airplanes	ELHB06	1.1686	49	.4471	50	4092	R
Been a member of a cheering or pep squad	ELHB50	1.1651	50	.4515	49	4094	W

Table 4.1.4 (continued)

PRE-OCCUPATIONAL INTEREST AND VARIABLE ABBREVIATION		Item Mean	RANK Mean	Item S.D.	RANK S.D.	Item N	RIASEC Code
Worked on a newspaper	ELHB52	1.1471	51	.3941	52	4086	A
Building electronic equipment or performing scientific experiments at home	ELHB05	1.1335	52	.4254	51	4081	I
Worked on any other publication	ELHB54	1.0423	53	.2328	53	4090	A
Worked on a yearbook	ELHB53	1.0337	54	.1999	54	4090	W

4.1.B. The Structure of Pre-Occupational Interests

Despite the fact that RIASEC activities are not particularly popular with adolescents, variation among individuals in the amount of time spent in these activities still could prove meaningful. To investigate this possibility, we subjected the 46 items deemed by our judges to be useful in differentiating among Holland categories to principal factoring, the diagonal of the inter-item correlation matrix being replaced with successive communality estimates. The number of factors to be extracted and subsequently rotated was set at the number of factors having eigenvalues greater than or equal to unity. After extraction, an oblique rotation was performed.[1]

This factor analysis procedure is used throughout the remainder of the chapter. In all instances, however, the number of factors reported is smaller than the number extracted and rotated. The number of factors reported was based on the following considerations: (1) the substantive interpretability of additional factors; (2) total explained variance accounted for by additional factors; (3) total variance explained by all reported factors; (4) the number of items which loaded highly on each additional factor; and (5) preference for a simple structure with maximum comparability across sample subgroups (grade/sex/race groupings) in number and character of factors. In practice, these judgemental criteria resulted in eight or nine factors being retained per scaling attempt.

Items were selected as candidates for a scale if the loading of the item on a factor (taken from the factor pattern matrix, the regression weight of the factor on the item) was greater than or equal to .300. The final scale scores for individuals were obtained by taking the simple average of all answered items defining a particular scale of pre-occupational interests. We decided, somewhat arbitrarily, although we think reasonably, to assign a missing data value on a given scale if the respondent had data on less than 60 percent of the items included in that scale. Due to the sketchy nature of vocational interest research on minority group members (i.e., blacks and females) we conducted this analysis for each sex/race sample within each grade level.[2]

The results of these analyses are presented in Tables 4.1.6 through 4.1.17. Using the previously mentioned criteria for retention of factors, nine factors are reported for males and eight for females at each grade level. Between 36 and 42 percent of the total variance in each grade/race/sex grouping was accounted for by these solutions.

These factor structures are remarkably similar at the conceptual level across all twelve grade/race/sex groupings. They do, in fact, reflect the Holland interest typologies. As anticipated in the evaluations summarized in Table 4.1.1, Conventional, Enterprising, and Investigative factors fail to emerge (with the one exception of a Conventional factor defined by the single item "sewing or knitting" among black male seventh graders). On the other hand, one or, more frequently, several dimensions of each of the remaining types -- Realistic, Artistic, and Social -- appear at each grade level and within each race/sex grouping. Realistic interests rather consistently appear along two dimensions -- "Mechanical" and "Sports" interests. Artistic interests are consistently represented by a "Musical"

Table 4.1.5 Relative Popularity of Pre-Occupational Interests During Adolescense, by Sex

PRE-OCCUPATIONAL INTERESTS AND VARIABLE ABBREVIATION		RANK 7th M Mean	RANK 7th F Mean	RANK 9th M Mean	RANK 9th F Mean	RANK 11th M Mean	RANK 11th F Mean	RIASEC Code
Sports section of a newspaper	RD19	1	25	1	17	1	13	R
Served on the school safety patrol	HB42*	2	5	4	1	31	22	S
Hunting, fishing, hiking, or camping	HB20	3	23	6	25	9	26	R
Cleaning house	HB14	4	1	3	2	8	1	C
Model building; for example, airplanes	HB06	5	41	13	43	33	45	R
History, current events, biography, autobiography	RD01	6	11	5	14	10	18	E
Hanging around, just loafing, talking, or snacking with friends	HB31	7	6	2	3	2	3	S
Serious drama, music, or "specials." (on TV)	TV06	8	3	7	7	4	4	A
Taking care of younger brothers or sisters	HB13	9	2	10	5	13	10	S
Educational courses, programs, or talks (on TV)	TV08	10	20	26	26	26	27	I
Outdoor or sports, such as SPORTS ILLUSTRATED	RD13	11	38	8	37	5	37	R
Attended club meetings	HB23	12	13	17	18	22	16	S
Hot rod, mechanical, science fiction magazines	RD12	13	40	11	40	11	41	R
Been a member of a band, orchestra, or other instrumental group	HB43	14	22	24	27	27	31	A
Science books	RD05	15	33	21	32	30	39	I
Classical or serious music (radio or records)	RR02	16	15	28	24	23	20	A
Books telling how to repair, build or do things	RD02	17	34	16	34	16	32	R
Gone to plays, lectures, concerts, etc., outside of school	HB39	18	17	29	21	18	19	A
Repairing mechanical things, such as appliances, cars	HB01	19	44	14	42	12	43	R
Religious books	RD03	20	21	27	20	29	24	S
Writing letters to friends or relatives	HB12	21	8	20	8	17	6	S
Refinishing or building things at home (woodwork, etc.)	HB07	22	39	25	39	25	40	R
Scientific magazines, such as NATIONAL GEOGRAPHIC	RD16	24	32	19	28	19	28	I
Practicing, arranging, or composing music	HB10	24	18	22	22	20	23	A
Painting, drawing, sculpturing	HB09	24	14	30	23	32	25	A
Been a member of a chorus, glee club, or other vocal group	HB44	26	9	34	19	35	21	A

Table 4.1.5 (continued)

PRE-OCCUPATIONAL INTEREST AND ABBREVIATION		RANK 7th M Mean	RANK 7th F Mean	RANK 9th M Mean	RANK 9th F Mean	RANK 11th M Mean	RANK 11th F Mean	RIASEC Code
Acted in plays, done play production work, or participated in public debates	HB40	27	27	38	31	40	34	[illegible]
Building electronic equipment or performing scientific experiments at home	HB05	28	42	33	45	36	46	I
Talking on the telephone to friends (each day)	HB38	29	16	15	4	7	2	S
Classical or best seller fiction, poetry, drama	RD07	30	24	18	16	15	11	A
Playing games like "war" or "spacemen"	HB17*	31	36	36	38	28	33	R
Attended dances	HB28	32	28	12	12	3	8	S
Doing personal shopping	HB32	33	26	23	15	21	14	E
Cooking for the family	HB15	34	7	35	6	34	7	S
Made solo musical performances or public speeches	HB41	35	29	37	30	37	29	A
Played on any other athletic team	HB49	36	35	31	36	24	35	R
Music, art books	RD06	37	30	39	35	39	36	A
Experimenting with new recipes	HB03	38	12	43	13	44	17	S
Worked on a newspaper	HB52	39	37	41	41	42	38	A
Writing poetry, plays, essays, or stories	HB11	40	31	42	33	41	30	A
Society, homemaking sections of a newspaper	RD20	41	19	40	9	38	5	S
Gone on dates	HB29	42	43	32	29	6	9	S
Literary magazines, such as ATLANTIC MONTHLY	RD17	43	45	44	44	43	42	A
Sewing, embroidering, knitting	HB02	44	10	45	11	45	12	C
Worked on any other publication	HB54	45	46	46	46	46	44	A
Attended church social meetings	HB24	46	4	9	10	14	15	S

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*These items varied slightly in content across the three instruments.

Table 4.1.6 Factor Structure for Interests of White Males, 7th Grade[a,b]

FACTOR I (10.5) (R)
REALISTIC- Mechanical

R	SVRD02	.601	repair books
I	SVHB05	.575	electronic equipment
R	SVHB01	.495	repair things
I	SVRD05	.415	science books
R	SVRD12	.409	mechanical magazines
R	SVHB07	.349	build things

FACTOR II (5.0) (A)
ARTISTIC- Musical

A	SVHB10	.948	practice music
A	SVHB43	.539	play in band
A	SVHB41	.427	make sole performances

FACTOR III (4.2) (S)
SOCIAL- Family/Home

S	SVHB15	.681	cook for family
S	SVHB03	.501	practice recipes

FACTOR IV (3.3) (S)
SOCIAL- Peer Influences/Opposite Sex

S	SVHB28	.695	go to dances
S	SVHB29	.619	go on dates

FACTOR V (3.4) (R)
REALISTIC- Sports

R	SVRD13	.637	sports magazines
R	SVRD19	.612	sports in newspapers

FACTOR VI (3.2) (?)
AMBIGUOUS- Reading

E	SVRD01	.556	history books
A	SVRD07	.490	classical fiction

FACTOR VII (2.8) (S)
SOCIAL- Peer Influences/Same Sex

S	SVHB31	.558	loaf with friends
S	SVHB38	.432	talk on telephone

FACTOR VIII (2.8) (A)
ARTISTIC- Painting

R	SVHB06	.437	build models
A	SVHB09	.425	paint, draw

FACTOR IX (2.7) (A)
ARTISTIC- Cultural Orientation

A	SVTV06	.492	drama on TV
A	SVRR02	.441	classical music on radio
I	SVTV08	.415	educational programs on TV

---

[a] Sample size is 1030. Fourteen factors had eigenvalues greater than or equal to 1.00, and accounted for 50.7% of the total variance. The nine factors selected accounted for 38.5% of the total variance. The oblique solution resulted in inter-factor correlations of less than .26 in absolute magnitude among the nine factors selected.

[b] Holland codes for the items included in each factor are recorded to the extreme left of each factor. Numbers in parentheses are the percents of total variance accounted for by each factor. Letters in parentheses are the summary Holland descriptions of the factors; these codes are recapitulated in the factor labels. Any factors which appear sufficiently mixed as to be not readily interpretable in the Holland scheme are summarized as (?) and labelled as "AMBIGUOUS."

Table 4.1.7 Factor Structure for Interests of White Males, 9th Grade[a,b]

FACTOR I (8.7) (S)
SOCIAL- Religious

S	NIRD03	.707	religious books

FACTOR II (5.9) (S)
SOCIAL- Peer Influences

S	NIHB38	.593	talk on telephone
S	NIHB28	.592	go to dances
S	NIHB29	.461	go on dates
S	NIHB31	.414	loaf with friends
E	NIHB32	.394	personal shopping

FACTOR III (4.8) (R)
REALISTIC- Mechanical

I	NIHB05	.676	electronic equipment
I	NIRD05	.504	science books
R	NIRD02	.468	repair books
R	NIHB01	.314	repair things

FACTOR IV (4.0) (A)
ARTISTIC- Musical

A	NIHB10	.786	practice music
A	NIHB43	.729	play in band
A	NIHB41	.437	make solo performances

FACTOR V (4.0) (R)
REALISTIC- Sports

R	NIRD19	.659	sports in newspaper
R	NIRD13	.633	sports magazines

FACTOR VI (3.3) (S)
SOCIAL- Family/Home

S	NIHB13	.717	take care of siblings
S	NIHB42	.690	babysit

FACTOR VII (2.9) (?)
AMBIGUOUS- Reading

A	NIRD07	.506	classical fiction
I	NIRD16	.414	science magazines
E	NIRD01	.323	history books

FACTOR VIII (2.7) (S)
SOCIAL- Family/Home

S	NIHB03	.528	practice recipes
S	NIHB15	.486	cook for family
C	NIHB02	.432	sew

FACTOR IX (2.6) (R)
REALISTIC- Mechanical

R	NIHB06	.552	build models
R	NIRD12	.532	mechanical magazines
R	NIHB01	.399	repair things

---

[a] The sample size (pairwise-present) is 1285-1297. Fifteen factors had eigenvalues greater than or equal to 1.00, and accounted for 53.0% of the total variance. The nine factors selected accounted for 38.9% of the total variance. The oblique solution resulted in inter-factor correlations of less than .29 in absolute magnitude among the nine factors selected.

[b] Holland codes for the items included in each factor are recorded to the extreme left of each factor. Numbers in parentheses are the percents of total variance accounted for by each factor. Letters in parentheses are the summary Holland descriptions of the factors; these codes are recapitulated in the factor labels. Any factors which appear sufficiently mixed as to be not readily interpretable in the Holland scheme are summarized as (?) and labelled as "AMBIGUOUS."

Table 4.1.8 Factor Structure for Interests of White Males, 11th Grade^{a,b}

FACTOR I (9.8) (A)
ARTISTIC- Dramatic

A	ELHB40	.504	act in plays
A	ELHB44	.345	member of vocal group
A	ELHB41	.338	make solo performances

FACTOR II (6.7) (S)
SOCIAL- Peer Influences

S	ELHB29	.672	go on dates
S	ELHB38	.633	talk on telephone
S	ELHB28	.560	go to dances
S	ELHB31	.343	loaf with friends

FACTOR III (4.9) (R)
REALISTIC- Sports

R	ELRD19	.687	sports in newspaper
R	ELRD13	.684	sports magazines
R	ELHB49	.345	miscellaneous teams

FACTOR IV (4.6) (A)
ARTISTIC- Musical

A	ELHB10	.803	practice music
A	ELHB43	.784	play in band
A	ELHB41	.406	make solo performances

FACTOR V (4.1) (S)
SOCIAL- Family/Home

S	ELHB15	.628	cook for family
S	ELHB03	.587	practice recipes

FACTOR VI (3.3) (R)
REALISTIC- Mechanical

R	ELRD12	.693	mechanical magazines
R	ELHB01	.414	repair things
R	ELHB17	.310	ride on motorcycle

FACTOR VII (3.1) (A)
ARTISTIC- Cultural Orientation

A	ELTV06	.619	drama on TV
I	ELTV08	.539	educational programs on TV
A	ELRR02	.391	classical music on radio

FACTOR VIII [illegible] (?)
AMBIGUOUS-

A	ELHB54	.415	miscellaneous publications
C	ELHB02	.334	sew

FACTOR IX (2.6) (A)
ARTISTIC- Painting

A	ELHB09	.464	paint, draw
A	ELRD06	.449	music, art books

---

[a] The sample size (pairwise-present) is 1430-1438. Thirteen factors had eigenvalues greater than or equal to 1.00, and accounted for 51.1% of the total variance. The nine factors selected accounted for 42.0% of the total variance. The oblique solution resulted in inter-factor correlations of less than .33 in absolute magnitude among the nine factors selected.

[b] Holland codes for the items included in each factor are recorded to the extreme left of each factor. Numbers in parentheses are the percents of total variance accounted for by each factor. Letters in parentheses are the summary Holland descriptions of the factors; these codes are recapitulated in the factor labels. Any factors which appear sufficiently mixed as to be not readily interpretable in the Holland scheme are summarized as (?) and labelled as "AMBIGUOUS."

Table 4.1.9 Factor Structure for Interests of
White Females, 7th Grade[a,b]

FACTOR I (10.7) (A)
ARTISTIC- Painting

A	SVRD06	.453	music, art books
A	SVHB09	.326	paint, draw

FACTOR II (5.5) (S)
SOCIAL- Family/Home

S	SVHB15	.715	cook for family
S	SVHB03	.580	practice recipes
C	SVHB14	.448	clean house
S	SVHB13	.376	take care of siblings

FACTOR III (4.2) (R)
REALISTIC- Mechanical

R	SVHB01	.551	repair things
R	SVHB05	.433	electronic equipment
R	SVHB07	.344	build things

FACTOR IV (3.7) (S)
SOCIAL- Peer Influences/Opposite Sex

S	SVHB28	.684	go to dances
S	SVHB29	.551	go on dates

FACTOR V (3.2) (A)
ARTISTIC- Musical

A	SVHB10	.651	practice music
A	SVHB43	.598	play in band
A	SVHB41	.458	make solo performances

FACTOR VI (3.0) (A)
ARTISTIC- Cultural Orientation

A	SVTV06	.549	drama on TV
A	SVRR02	.458	classical music on radio
A	SVTV08	.455	educational programs on TV

FACTOR VII (2.9) (R)
REALISTIC- Sports

R	SVRD19	.526	sports in newspaper
R	SVRD13	.525	sports magazines
R	SVHB49	.309	miscellaneous teams

FACTOR VIII (2.8) (S)
SOCIAL- Religious

I	SVRD05	.398	science books
S	SVRD03	.375	religious books
S	SVHB24	.317	church socials

---

[a] Sample size is 1219. Fourteen factors had eigenvalues greater than or equal to 1.00, and accounted for 50.6% of the total variance. The eight factors selected accounted for 36.1% of the total variance. The oblique solution resulted in inter-factor correlations of less than .24 in absolute magnitude among the eight factors selected.

[b] Holland codes for the items included in each factor are recorded to the extreme left of each factor. Numbers in parentheses are the percents of total variance accounted for by each factor. Letters in parentheses are the summary Holland descriptions of the factors; these codes are recapitulated in the factor labels. Any factors which appear sufficiently mixed as to be not readily interpretable in the Holland scheme are summarized as (?) and labelled as "AMBIGUOUS."

Table 4.1.10 Factor Structure for Interests of White Females, 9th Grade[a,b]

FACTOR I (9.8) (?)
AMBIGUOUS- Reading

E	NIRD01	.553	history books
A	NIRD07	.470	classical fiction
I	NIRD16	.366	science magazines
A	NIHB39	.312	go to plays, concerts

FACTOR II (5.7) (S)
SOCIAL- Peer Influences

S	NIHB38	.623	talk on telephone
S	NIHB31	.554	loaf with friends
S	NIHB28	.453	go to dances
E	NIHB32	.391	personal shopping

FACTOR III (4.3) (S)
SOCIAL- Family/Home

S	NIHB15	.614	cook for family
S	NIHB03	.528	practice recipes
C	NIHB14	.463	clean house

FACTOR IV (4.1) (R)
REALISTIC- Mechanical

R	NIHB06	.441	build models
R	NIHB01	.432	repair things
R	NIRD12	.363	mechanical magazines
R	NIRD02	.304	repair books

FACTOR V (3.2) (A)
ARTISTIC- Musical

A	NIHB10	.644	practice music
A	NIHB43	.616	play in band
A	NIHB41	.455	make solo performances

FACTOR VI (3.0) (R)
REALISTIC- Sports

R	NIRD19	.648	sports in newspaper
R	NIRD13	.435	sports magazines

FACTOR VII (2.9) (A)
ARTISTIC- Cultural Orientation

A	NITV06	.556	drama on TV
I	NITV08	.525	educational programs on TV
A	NIRR02	.400	classical music on radio

FACTOR VIII (2.7) (S)
SOCIAL- Religious

S	NIRD03	.491	religious books
S	NIHB24	.311	church socials

---

[a] The sample size (pairwise-present) is 1538-1554. Fifteen factors had eigenvalues greater than or equal to 1.00, and accounted for 52.1% of the total variance. The eight factors selected accounted for 35.6% of the total variance. The oblique solution resulted in inter-factor correlations of less than .26 in absolute magnitude among the eight factors selected.

[b] Holland codes for the items included in each factor are recorded to the extreme left of each factor. Numbers in parentheses are the percents of total variance accounted for by each factor. Letters in parentheses are the summary Holland descriptions of the factors; these codes are recapitulated in the factor labels. Any factors which appear sufficiently mixed as to be not readily interpretable in the Holland scheme are summarized as (?) and labelled as "AMBIGUOUS."

Table 4.1.11 Factor Structure for Interests of White Females, 11th Grade[a,b]

FACTOR I (10.2) (?)
AMBIGUOUS- Reading

A	ELRD07	.561	classical fiction
A	ELHB39	.438	go to plays, concerts
I	ELRD16	.345	scientific magazines
E	ELRD01	.338	history books
S	ELHB23	.326	attend club meetings

FACTOR II (5.8) (S)
SOCIAL- Peer Influences/Opposite Sex

S	ELHB29	.633	go on dates
S	ELHB28	.418	go to dances
R	ELHB17	.416	ride around on motorcycle
S	ELHB38	.310	talk on telephone

FACTOR III (4.8) (S)
SOCIAL- Family/House

S	ELHB15	.714	cook for family
C	ELHB14	.594	clean house
S	ELHB03	.422	practice recipes
S	ELHB13	.303	take care of siblings

FACTOR IV (4.4) (S)
SOCIAL- Religious

S	ELHB24	.538	church socials
S	ELRD03	.459	religious books
S	ELHB42	.369	served as leader for children
S	ELHB23	.311	attend club meetings

FACTOR V (3.6) (?)
AMBIGUOUS-

S	ELRD20	.536	society section newspaper
R	ELRD19	.504	sports in newspaper

FACTOR VI (3.2) (R)
REALISTIC- Sports

R	ELRD13	.425	sports magazines
R	ELRD19	.363	sports in newspaper

FACTOR VII (2.8) (A)
ARTISTIC- Musical

A	ELHB10	.777	practice music
A	ELHB43	.507	play in band
A	ELHB41	.340	make solo performances

FACTOR VIII (2.6) (S)
SOCIAL- Peer Influences/Same Sex

S	ELHB31	.706	loaf with friends
E	ELHB32	.361	personal shopping
S	ELHB38	.352	talk on telephone

---

[a] The sample size (pairwise-present) is 1641-1653. Thirteen factors had eigenvalues greater than or equal to 1.00, and accounted for 49.1% of the total variance. The eight factors selected accounted for 37.3% of the total variance. The oblique solution resulted in inter-factor correlations of less than .38 in absolute magnitude among the eight factors selected.

[b] Holland codes for the items included in each factor are recorded to the extreme left of each factor. Numbers in parentheses are the percents of total variance accounted for by each factor. Letters in parentheses are the summary Holland descriptions of the factors; these codes are recapitulated in the factor labels. Any factors which appear sufficiently mixed as to be not readily interpretable in the Holland scheme are summarized as (?) and labelled as "AMBIGUOUS."

Table 4.1.12 Factor Structure for Interests of Black Males, 7th Grade[a,b]

FACTOR I (11.7) (?)
AMBIGUOUS- Reading

I	SVRD16	.712	science magazines
R	SVRD02	.420	repair books
R	SVRD12	.417	mechanical magazines
S	SVRD03	.315	religious books

FACTOR II (4.8) (S)
SOCIAL- Peer Influences

S	SVHB28	.724	go to dances
S	SVHB29	.539	go on dates
S	SVHB38	.478	talk on telephone

FACTOR III (4.4) (S)
SOCIAL- Family/Home

C	SVHB14	.620	clean house
S	SVHB13	.466	take care of siblings

FACTOR IV (4.0) (A)
ARTISTIC- Cultural Orientation

A	SVRR02	.687	classical music on radio
I	SVTV08	.657	educational programs on TV

FACTOR V (3.7) (A)
ARTISTIC- Musical

A	SVHB43	.731	play in band
A	SVHB10	.619	practice music
A	SVHB41	.466	make solo performances

FACTOR VI (3.5) (R)
REALISTIC- Mechanical

-S	SVRD03	-.455	religious books
I	SVHB05	.419	electronic equipment
R	SVHB01	.326	repair things
R	SVHB07	.320	build things
R	SVHB06	.314	build models

FACTOR VII (3.2) (C)
CONVENTIONAL- Sewing

C	SVHB02	.599	sew

FACTOR VIII (3.1) (?)
AMBIGUOUS-

S	SVHB12	.556	write letters
R	SVHB07	.380	build things

FACTOR IX (3.0) (R)
REALISTIC- Sports

R	SVRD19	.498	sports in newspaper
R	SVRD13	.334	sports magazines

---

[a] Sample size is 261. Seventeen factors had eigenvalues greater than or equal to 1.00, and accounted for 61.7% of the total variance. The nine factors selected accounted for 41.4% of the total variance. The oblique solution resulted in inter-factor correlations of less than .17 in absolute magnitude among the nine factors selected.

[b] Holland codes for the items included in each factor are recorded to the extreme left of each factor. Numbers in parentheses are the percents of total variance accounted for by each factor. Letters in parentheses are the summary Holland descriptions of the factors; these codes are recapitulated in the factor labels. Any factors which appear sufficiently mixed as to be not readily interpretable in the Holland scheme are summarized as (?) and labelled as "AMBIGUOUS."

Table 4.1.13 Factor Structure for Interests of Black Males, 9th Grade[a,b]

FACTOR I (12.8) (?)
AMBIGUOUS- Reading

I	NIRD05	.653	science books
A	NIRD06	.494	music, art books
R	NIRD02	.440	repair books
S	NIRD03	.376	religious books
E	NIRD01	.331	history books

FACTOR II (5.2) (S)
SOCIAL- Peer Influences

S	NIHB28	.642	go to dances
S	NIHB29	.606	go on dates
S	NIHB38	.394	talk on telephone

FACTOR III (4.2) (S)
SOCIAL- Society Orientation

S	NIRD20	.948	society section in newspaper
A	NIRD17	.390	literary magazines

FACTOR IV (3.8) (S)
SOCIAL- Family/Home

S	NIHB13	.757	take care of siblings
S	NIHB42	.403	babysit
C	NIHB14	.306	clean house

FACTOR V (3.5) (A)
ARTISTIC- Musical

A	NIHB10	.703	practice music
A	NIHB43	.652	play in band

FACTOR VI (3.1) (S)
SOCIAL- Communication

S	NIHB12	.538	write letters
S	NIHB38	.385	talk on telephone

FACTOR VII (3.1) (A)
ARTISTIC- Cultural Orientation

A	NITV06	.566	drama on TV
A	NIRR02	.462	classical music on radio
I	NITV08	.387	educational programs on TV

FACTOR VIII (2.9) (R)
REALISTIC- Sports

R	NIRD19	.595	sports in newspaper
R	NIRD13	.586	sports magazines

FACTOR IX (2.8) (A)
ARTISTIC- Dramatic

A	NIHB40	.763	act in plays
A	NIHB41	.371	make solo performances
A	NIHB39	.335	go to plays, concerts

---

[a] The sample size (pairwise-present) is 434-449. Seventeen factors had eigenvalues greater than or equal to 1.00, and accounted for 60.6% of the total variance. The nine factors selected accounted for 41.3% of the total variance. The oblique solution resulted in inter-factor correlations of less than .29 in absolute magnitude among the nine factors selected.

[b] Holland codes for the items included in each factor are recorded to the extreme left of each factor. Numbers in parentheses are the percents of total variance accounted for by each factor. Letters in parentheses are the summary Holland descriptions of the factors; these codes are recapitulated in the factor labels. Any factors which appear sufficiently mixed as to be not readily interpretable in the Holland scheme are summarized as (?) and labelled as "AMBIGUOUS."

Table 4.1.14 Factor Structure for Interests of Black Males, 11th Grade[a,b]

FACTOR I (12.0) (?)
AMBIGUOUS- Reading

E	ELRD01	.595	history books
A	ELRD07	.509	classical fiction
I	ELRD05	.472	science books

FACTOR II (5.3) (A)
ARTISTIC- Musical

A	ELHB43	.699	play in band
A	ELHB10	.692	practice music
A	ELHB41	.408	make solo performances
A	ELRD06	.349	music, art books

FACTOR III (4.8) (S)
SOCIAL- Peer Influences

S	ELHB29	.657	go on dates
S	ELHB28	.552	go to dances
S	ELHB38	.533	talk on telephone

FACTOR IV (3.9) (R)
REALISTIC- Sports

R	ELRD19	.735	sports in newspaper
R	ELRD13	.627	sports magazines

FACTOR V (3.8) (?)
AMBIGUOUS-

A	ELHB39	.419	go to plays, concerts
S	ELHB23	.306	attend club meetings

FACTOR VI (3.4) (S)
SOCIAL- Society Orientation

S	ELRD20	.699	society section in newspaper
A	ELRD17	.543	literary magazines

FACTOR VII (3.2) (A)
ARTISTIC- Literary

A	ELHB54	.465	miscellaneous publications
A	ELHB52	.452	work on newspaper

FACTOR VIII (3.1) (S)
SOCIAL- Family/Home

C	ELHB14	.486	clean house
S	ELHB15	.399	cook for family

FACTOR IX (2.9) (A)
ARTISTIC- Painting

A	ELHB09	.612	paint, draw
R	ELHB07	.339	build things

---

[a] The sample size (pairwise-present) is 441-451. Fifteen factors had eigenvalues greater than or equal to 1.00, and accounted for 57.1% of the total variance. The nine factors selected accounted for 42.3% of the total variance. The oblique solution resulted in inter-factor correlations of less than .26 in absolute magnitude among the nine factors selected.

[b] Holland codes for the items included in each factor are recorded to the extreme left of each factor. Numbers in parentheses are the percents of total variance accounted for by each factor. Letters in parentheses are the summary Holland descriptions of the factors; these codes are recapitulated in the factor labels. Any factors which appear sufficiently mixed as to be not readily interpretable in the Holland scheme are summarized as (?) and labelled as "AMBIGUOUS."

Table 4.1 15 Factor Structure for Interests of Black Females, 7th Grade[a,b]

FACTOR I (12.4) (?)
AMBIGUOUS- Reading

E	SVRD01	.579	history books
A	SVRD06	.524	music, art books
R	SVRD02	.385	repair books
A	SVRD07	.359	classical fiction
R	SVRD12	.318	mechanical magazines

FACTOR II (5.3) (S)
SOCIAL- Family/Home

S	SVHB15	.685	cook for family
S	SVHB03	.518	practice recipes
C	SVHB14	.471	clean house
S	SVHB13	.463	take care of siblings
S	SVHB12	.335	write letters

FACTOR III (4.8) (S)
SOCIAL- Peer Influences

E	SVHB32	.595	personal shopping
S	SVHB38	.578	talk on telephone
S	SVHB31	.557	loaf with friends
S	SVHB28	.465	go to dances

FACTOR IV (4.2) (R)
REALISTIC- Mechanical

R	SVHB01	.664	repair things

FACTOR V (3.7) (A)
ARTISTIC- Cultural Orientation

I	SVTV08	.646	educational programs on TV
A	SVRR02	.559	classical music on radio
A	SVTV06	.359	drama on TV

FACTOR VI (3.4) (A)
ARTISTIC- Musical

A	SVHB10	.700	practice music

FACTOR VII (3.1) (?)
AMBIGUOUS-

R	SVHB17	.738	ride on motorcycle
A	SVHB54	.373	miscellaneous publications

FACTOR VIII (2.9) (A)
ARTISTIC- Dramatic

A	SVHB40	.342	act in plays
-A	SVRD06	-.341	music, art books

---

[a] Sample size is 302. Sixteen factors had eigenvalues greater than or equal to 1.00, and accounted for 59.9% of the total variance. The eight factors selected accounted for 39.9% of the total variance. The oblique solution resulted in inter-factor correlations of less than .20 in absolute magnitude among the eight factors selected.

[b] Holland codes for the items included in each factor are recorded to the extreme left of each factor. Numbers in parentheses are the percents of total variance accounted for by each factor. Letters in parentheses are the summary Holland descriptions of the factors; these codes are recapitulated in the factor labels. Any factors which appear sufficiently mixed as to be not readily interpretable in the Holland scheme are summarized as (?) and labelled as "AMBIGUOUS."

Table 4.1.16 Factor Structure for Interests of Black Females, 9th Grade[a,b]

FACTOR I (10.6) (?)
AMBIGUOUS- Reading

I	NIRD05	.575	science books
E	NIRD01	.500	history books
A	NIRD07	.358	classical fiction

FACTOR II (5.0) (S)
SOCIAL- Peer Influences

S	NIHB28	.504	go to dances
S	NIHB31	.467	loaf with friends
E	NIHB32	.437	personal shopping
S	NIHB38	.423	talk on telephone

FACTOR III (4.1) (A)
ARTISTIC- Musical

A	NIHB10	.580	practice music
A	NIHB43	.490	play in band
A	NIRD06	.485	music, art books
A	NIHB41	.392	make solo performances

FACTOR IV (3.8) (S)
SOCIAL- Family/Home

S	NIHB15	.455	cook for family
S	NIHB03	.331	practice recipes
I	NITV08	.307	educational programs on TV

FACTOR V (3.4) (R)
REALISTIC- Mechanical

I	NIHB05	.487	electronic equipment
R	NIHB06	.334	build models

FACTOR VI (3.2) (S)
SOCIAL- Family/Home

S	NIHB42	.756	babysit
S	NIHB13	.415	take care of siblings

FACTOR VII (3.1) (R)
REALISTIC- Sports

R	NIRD19	.662	sports in newspaper
R	NIRD13	.421	sports magazines

FACTOR VIII (3.0) (A)
ARTISTIC- Cultural Orientation

A	NIRR02	.568	classical music on radio

---

[a] The sample size (pairwise-present) is 500-512. Sixteen factors had eigenvalues greater than or equal to 1.00, and accounted for 55.8% of the total variance. The eight factors selected accounted for 36.1% of the total variance. The oblique solution resulted in inter-factor correlations of less than .20 in absolute magnitude among the eight factors selected.

[b] Holland codes for the items included in each factor are recorded to the extreme left of each factor. Numbers in parentheses are the percents of total variance accounted for by each factor. Letters in parentheses are the summary Holland descriptions of the factors; these codes are recapitulated in the factor labels. Any factors which appear sufficiently mixed as to be not readily interpretable in the Holland scheme are summarized as (?) and labelled as "AMBIGUOUS."

Table 4.1.17 Factor Structure for Interests of Black Females, 11th Grade[a,b]

FACTOR I (12.2) (A)
ARTISTIC- Musical

A	ELHB44	.549	member of vocal group
A	ELHB41	.371	make solo performances
A	ELHB39	.328	go to plays, concerts

FACTOR II (5.7) (S)
SOCIAL- Peer Influences

S	ELHB38	.652	talk on telephone
S	ELHB31	.575	loaf with friends
E	ELHB32	.496	personal shopping
S	ELHB28	.345	go to dances

FACTOR III (4.3) (?)
AMBIGUOUS- Reading

A	ELRD17	.520	literary magazines
I	ELRD05	.389	science books
R	ELRD13	.377	sports magazines
R	ELRD12	.365	mechanical magazines
A	ELRD06	.308	music, art books

FACTOR IV (3.6) (A)
ARTISTIC- Cultural Orientation

I	ELTV08	.653	educational programs on TV
A	ELTV06	.520	drama on TV

FACTOR V (3.3) (?)
AMBIGUOUS- Reading

A	ELRD07	.508	classical fiction
E	ELRD01	.425	history books

FACTOR VI (3.1) (R)
REALISTIC- Mechanical

I	ELHB05	.627	electronic equipment
R	ELHB07	.595	build things

FACTOR VII (3.0) (?)
AMBIGUOUS-

R	ELRD19	.592	sports in newspaper
S	ELRD20	.423	society section newspaper

FACTOR VIII (3.0) (?)
AMBIGUOUS-

R	ELHB17	.499	ride on motorcycle
A	ELHB11	.414	write poetry
S	ELHB29	.315	go on dates

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[a] The sample size (pairwise-present) is 545-555. Sixteen factors had eigenvalues greater than or equal to 1.00, and accounted for 57.6% of the total variance. The eight factors selected accounted for 38.2% of the total variance. The oblique solution resulted in inter-factor correlations of less than .26 in absolute magnitude among the eight factors selected.

[b] Holland codes for the items included in each factor are recorded to the extreme left of each factor. Numbers in parentheses are the percents of total variance accounted for by each factor. Letters in parentheses are the summary Holland descriptions of the factors; these codes are recapitulated in the factor labels. Any factors which appear sufficiently mixed as to be not readily interpretable in the Holland scheme are summarized as (?) and labelled as "AMBIGUOUS."

dimension, often by two others, denoted "Cultural Orientation" and "Painting," and occasionally by a fourth dimension of Artistic interests ("Dramatic" Orientations).

The dimensions of Social orientation which emerge strike us as quite reasonable. A "Family/Home" dimension regularly appears in the analyses, occasionally differentiated into two factors, one concerned with people (caring for siblings, babysitting) and another concerned with more task-oriented pursuits (cooking, cleaning, practicing recipes).[3] "Peer Influences" or, more accurately, adolescent peer social activities, appear in all analyses; occasionally (for white seventh grade males, and white seventh and eleventh grade females) this activity splits into two components distinguishing same-sex from opposite-sex peer activities. A third Social diemnsion -- "Religious Orientation" -- appears in one-third of the analyses.

Six of the 102 factors in this analysis defied interpretation in the Holland scheme and additionally could not be assigned labels which summarized the disparate items defining them. In 10 of the analyses a cluster of activities appeared, often as the first factor extracted, which could not be classified within the Holland typology but which was readily recognizable as a "Reading" dimension. Rather than different subject matters clustering with Realistic, Social, or other activities, what emerged was an undifferentiated reading factor. There is reason to believe that high scores on this factor would be related to higher levels of ability and school performance among adolescents, and possibly to higher educational goals and later attainments. However, in view of the diverse, Holland-wise, composition of this factor, it would be misleading to characterize it as "intellectual" in nature and thus equate it with an "Investigative orientation" under the Holland typology.

Thus, based upon the pool of theoretically relevant items available to us, adolescent "manifest interests" or activities appear to be mainly Realistic, Social, and Artistic in nature. Each of these domains, however, itself appears to subsume several distinguishable "sub-dimensions" which may be of interest in their own right. It should be remembered, however, that failure of Conventional, Investigative, and Enterprising factor clusters to emerge from our data does not necessarily reflect their irrelevance for youth. Several possibilities could have contributed to this. First, adolescent interests may not be sufficiently differentiated in the secondary school years to cover the entire range represented by the Holland typology of (pre)-occupational interests. Second, the pool of items itself may be too narrow. According to our judges, it will be recalled, these three dimensions of activity and interests were poorly represented in the BEQ. Thus, it is possible that had a sufficient number of such items been available, they would have clustered together as anticipated in the Holland theory.

Although the factors emerging in each grade/race/sex grouping are consistently similar at the conceptual level, the specific patterning of items both within and between factors does differ from group to group. However, when the distinguishable sub-dimensions of each of the Holland types are combined, these differences are reduced. The analyses to follow in later chapters would be markedly more rich if we were to retain these finer distinctions within type of interest and, furthermore, construct race/sex/

grade-specific scales. Such a strategy, unfortunately, would tremendously increase the complexity of the analysis and, at the same time, reduce the theoretical clarity and generalizability of our results. We have, therefore, chosen to use these factor analyses as supportive of the judges' classification as presented in Table 4.1.1, which we use as the basis for our final scale construction. The results of the factor analyses generally are consistent with this a priori classification. Where there were disparities, these generally were idiosyncratic to particular race, sex or class groupings and suggest no organization clearly superior to that available in the distinctions borrowed from Holland. Procedurally, then, for each race/sex/grade subgroup the same items (see below) are summed and the total is divided by the number of items employed to construct individuals' scale scores. When fewer than 60 percent of a scale's items have been answered, a missing data code is assigned (see below, C). We are confident that the Realistic, Artistic, and Social interest dimensions are well represented in the data. Although we do construct Investigative, Enterprising, and Conventional scales based upon our judges' determinations, these probably are less valid and reliable than the others. The scales resulting from these procedures are presented and discussed next.

4.1.C. Pre-Occupational Interest Scale Properties

As indicated in the last section, the items identified by our judges as tapping each of the six Holland interest types (see Table 4.1.1) are the basis for our "manifest interest" scales. The resulting scales differ in the number of items each includes. Thus, the Realistic (REAL), Artistic (ARTS), and Social (SOCL) interest scales are composed of 10, 15, and 13 items, respectively, while four items contribute to the Investigative (INVE) scale, and only two items each are included in the Enterprising (ENTR) and Conventional (CONV) scales.

Table 4.1.18 presents the means, standard deviations, and number of valid scale scores for males and females in all three target grade groups. At all three grade levels, males score markedly higher on Realistic interests than do females. In fact, over 30 percent of the variance in Realistic interests is attributable to sex. Females consistently score much higher than males on Conventional interests ($ETA^2 \geq .35$); and in the latter years of school, they greatly outstrip males in participation in Social activities ($ETA^2 \geq .25$). In general, the picture that emerges is quite reflective of the stereotypic interest patterns of males and females -- males tending to engage in Realistic pursuits with increasing emphasis on Social interests as they grow older and females being more disposed toward Social and Conventional activities. This pattern of sex differences provides external validity for the scales as constructed from theoretical judgements. The final column of Table 4.1.18 indicates that activity patterns are not markedly differentiated along racial lines.

Several additional empirical characteristics of these indexes need to be noted. First, only trivial amounts of missing data scores were recorded in most grade/sex categories. Second, as anticipated, the Realistic, Artistic, and Social scales have acceptable levels of internal consistency (see Table 4.1.19) at all grade levels. The Conventional Index has an

Table 4.1.18 Pre-Occupational Interests, Means and Standard Deviations, by Sex, for the 1965 and 1969 Graduating Classes

INTEREST[a] SCALE	MALES			FEMALES			TOTAL			ETA^2 FOR SEX	ETA^2 FOR RACE	
	$\bar{X}$[b]	SD	N[c]	$\bar{X}$[b]	SD	N[c]	$\bar{X}$[b]	SD	N[c]			
GROUP4 7th Grade												
(10) REAL07	1.95	.50	1712	1.36	.34	1911	1.64	.52	3623	.335*		
(4) INVE07	1.66	.62	1712	1.41	.45	1911	1.53	.55	3623	.049*		
(15) ARTS07	1.48	.37	1712	1.67	.43	1911	1.58	.41	3623	.053*	.002*	B
(13) SOCL07	1.72	.38	1712	2.03	.45	1911	1.88	.45	3623	.122*	.036*	B
(2) ENTR07	1.89	.77	1712	1.96	.81	1911	1.93	.79	3623	.002*		
(2) CONV07	1.69	.60	1712	2.70	.76	1911	2.22	.85	3623	.351*	.014*	B
9th Grade												
(10) REAL09	1.99	.50	2451	1.32	.30	2588	1.65	.53	5039	.395*	.002*	W
(4) INVE09	1.59	.62	2451	1.32	.42	2588	1.45	.54	5039	.062*	.002*	W
(15) ARTS09	1.42	.36	2452	1.57	.41	2588	1.50	.39	5040	.037*		
(13) SOCL09	1.78	.41	2452	2.34	.44	2588	2.07	.51	5040	.302*	.023*	B
(2) ENTR09	2.00	.79	2451	2.07	.80	2588	2.03	.79	5039	.002*	.002*	B
(2) CONV09	1.70	.58	2451	2.81	.73	2588	2.27	.87	5039	.410*	.020*	B
11th Grade												
(10) REAL11	2.03	.54	2778	1.39	.35	2899	1.70	.55	5677	.338*	.002*	W
(4) INVE11	1.54	.67	2778	1.31	.47	2900	1.42	.59	5678	.040*		
(15) ARTS11	1.45	.43	2782	1.62	.45	2900	1.54	.45	5682	.034*	.001*	B
(13) SOCL11	1.84	.44	2784	2.40	.49	2904	2.13	.55	5688	.268*	.022*	B
(2) ENTR11	1.91	.78	2774	2.11	.78	2887	2.02	.79	5661	.016*	.014*	B
(2) CONV11	1.58	.57	2771	2.88	.77	2892	2.25	.94	5663	.478*	.021*	B
GROUP AEQ 11th Grade												
(10) REAL11	2.03	.48	704	1.33	.27	1012	1.62	.51	1716	.462*		
(4) INVE11	1.60	.64	704	1.31	.39	1012	1.43	.52	1716	.074*		
(15) ARTS11	1.42	.37	704	1.62	.42	1012	1.54	.41	1716	.057*		
(13) SOCL11	1.72	.41	704	2.29	.47	1012	2.06	.53	1716	.284*		
(2) ENTR11	1.91	.77	704	2.10	.83	1012	2.02	.81	1716	.014*		
(2) CONV11	1.62	.54	704	2.83	.75	1012	2.33	.90	1716	.439*	.011*	B

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[a] See text for variable abbreviations. Number in parentheses is number of items in scale.

[b] Means have a possible range from 1 to 4

[c] Maximum case bases are 7th 3623, 9th 5040, 11th 5690, AEQ 1716 totals.

*Signifies that ETA is significantly different from zero at $\alpha \leq .05$; B=Black high, W=White high.

Table 4.1.19 Average Inter-Item Correlation and Coefficient of Internal Consistency for Pre-Occupational Interest Scales Among GROUP4 and AEQ-GROUP2 Adolescents[a]

Interest Scale	GROUP4 7th Grade		GROUP4 9th Grade		GROUP4 11th Grade		AEQ GROUP2		# of Items	# of r_{xy}
	$\bar{r}_{xy}$	ρ_{xy}	$\bar{r}_{xy}$	ρ_{xy}	$\bar{r}_{xy}$	ρ_{xy}	$\bar{r}_{xy}$	ρ_{xy}		
Realistic	.196	.709	.209	.725	.193	.705	.219	.737	10	45
Investigative	.174	.410	.189	.431	.198	.442	.210	.515	4	6
Artistic	.126	.684	.119	.670	.147	.721	.142	.713	15	105
Social	.112	.621	.140	.679	.151	.698	.152	.700	13	78
Enterprising	.013	.026	-.014	.028	.002	.004	.010	.020	2	1
Conventional	.316	.480	.350	.519	.400	.571	.353	.522	2	1

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[a] If K is the number of items, the formula employed was the Spearman-Brown step-up $\rho_{xy} = (K\bar{r}_{xy})/[1 + (K-1)\bar{r}_{xy}]$.

average reliability of only .5, the Investigative index fairs slightly worse, and, by the criterion of internal consistency, the Enterprising scale is an empirical disaster! Given that the factor analyses reported in Section 4.1.B., above, led us to expect that these last three indexes could be, at best, only modestly successful, we are not surprised at these results; if anything, we actually are gratified at the levels of internal consistency documented for the Investigative and Conventional scales.

Finally, as Table 4.1.20 demonstrates, these scales are, at most, only modestly intercorrelated for either sex. The largest correlations in any grade/sex group relate Artistic, Investigative and Realistic pursuits. These generally range between .30 and .40. Artistic and Investigative interests correlate the highest among females, as do they for all groups of males beyond the seventh grade.

In summary, the scales designed to tap pre-occupational interests among adolescents were constructed using items picked by judges on theoretical criteria. These scales have several advantages over interest scales employed in previous research:

(1) The items employed to construct our scales are reports of actual activities rather than indications of potential interests which might never be pursued.

(2) The same items are available to be answered by males and females; thus, unlike much research on vocational interests (see Campbell, 1971:103), sex differences in the patterns of interests are not built into the analysis *a priori*.

Table 4.1.20 Intercorrelations of Pre-Occupational Interest Scales for GROUP4 and AEQGP2 Youth

1. GROUP4 7th Grade[a]: Males Below Diagonal, Females Above

	REAL	INVE	ARTS	SOCL	ENTR	CONV		M	F
REAL	----	.351	.371	.307	.232	.144	$\bar{r}_{xy}$*	.257	.279
INVE	.408	----	.405	.219	.292	.117			
ARTS	.321	.386	----	.338	.350	.194			
SOCL	.405	.240	.359	----	.328	.366			
ENTR	.260	.277	.298	.222	----	.166			
CONV	.074	.079	.168	.269	.094	----			

2. GROUP4 9th Grade[b]: Males Below Diagonal, Females Above

	REAL	INVE	ARTS	SOCL	ENTR	CONV		M	F
REAL	----	.329	.372	.266	.184	.125	$\bar{r}_{xy}$*	.221	.237
INVE	.310	----	.393	.110	.258	.132			
ARTS	.203	.402	----	.190	.304	.126			
SOCL	.278	.101	.294	----	.285	.324			
ENTR	.248	.254	.297	.248	----	.162			
CONV	.054	.082	.136	.278	.129	----			

3. GROUP4 11th Grade[c]: Males Below Diagonal, Females Above

	REAL	INVE	ARTS	SOCL	ENTR	CONV		M	F
REAL	----	.317	.333	.295	.183	.104	$\bar{r}_{xy}$*	.203	.214
INVE	.228	----	.401	.134	.210	.041			
ARTS	.138	.386	----	.238	.268	.038			
SOCL	.300	.116	.318	----	.276	.273			
ENTR	.179	.226	.257	.242	----	.096			
CONV	.054	.074	.142	.259	.119	----			

4. GROUP2 11th Grade[d]: Males Below Diagonal, Females Above

	REAL	INVE	ARTS	SOCL	ENTR	CONV		M	F
REAL	----	.300	.281	.258	.155	.118	$\bar{r}_{xy}$*	.223	.213
INVE	.182	----	.364	.056	.165	.084			
ARTS	.076	.339	----	.276	.256	.149			
SOCL	.334	.169	.360	----	.282	.314			
ENTR	.182	.242	.301	.306	----	.134			
CONV	.114	.142	.142	.261	.199	----			

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*All coefficients reported are significantly different from zero at $\alpha \leq .05$.

[a] Pairwise present case bases are 1712 for males, 1911 for females.

[b] Pairwise present case bases range from 2450-2452 for males, 2588 for females.

[c] Pairwise present case bases range from 2761-2782 for males, 2874-2900 for females.

[d] Pairwise present case bases are 704 for males, 1012 for females.

(3) Virtually the same "interest inventory" was administered to a panel of students in the seventh, ninth and eleventh grades, allowing longitudinal analysis of interests.

(4) Exploratory empirical analyses were conducted to validate the distinctions made by our judges. Furthermore, these analyses were conducted separately by race/sex subgroups in order that the presence of similar conceptual clusters in minority as well as majority groups could be examined uncontaminated by potential differences in group to group variation on particular items which might affect total-sample factor patterns.

4.1.D. Assessment of the Generality of the Pre-Occupational Interest Scales

As a further check on the usefulness of our judgemental scales, an additional set of factoring exercises was conducted on a pool of items more reflective of the full range of adolescents' pursuits. Confidence in our scales above would, of course, be enhanced if they could be demonstrated to adequately represent the broad range of adolescent interests. In a sense, the previous analyses have been stacked in favor of the Holland scheme by preselecting items thought pertinent to that scheme. Therefore, in the analyses reported here we employ all of the information on "active" adolescent interests available to us, regardless of their seeming relevance to the Holland classification.[4] This will allow us to assess, if only loosely, the sufficiency of our previously defined dimensions in accounting for adolescent interests more broadly construed. Specifically, we include all 54 items from each grade level of the BEQ which are "active" pursuits ('hobbies' as indicated by the variable abbriviation "HB"), excluding the passive pastimes dealing with reading, listening, and television-viewing. As before, analyses of interest patterns are conducted separately for each of the twelve grade/race/sex subgroups of students.

The empirical results of these analyses are presented in Appendix C, Tables C.1 through C.12. We present here a brief interpretation of those data. The overall correspondence between the dimensions which appear in these analyses and those which appeared when we included just theoretically relevant questionnaire items is quite impressive. The inclusion of the extraneous items did not cloud the uniqueness of the Social, Realistic, or Artistic factors underlying the inventory. The two major social dimensions -- Peers and Family -- consistently emerged from these data. Realistic interests were represented again by a Mechanical and (two) Sports dimensions. Artistic interests emerged in a recurrent "Musical" factor, and an occasional painting or drawing cluster. Two new factors, both recognizable as dimensions of Social interests, emerged. One, labelled a "School Activities" cluster, dealt with such undertakings as working on the school annual or newspaper, being a member of a pep or cheering squad, and so forth. A second, although infrequently occurring, cluster involved serving as a youth leader, attending club meetings and church socials, working on committees, and similar activities. We call this "Community Orientation." In addition to these commonalities, however, additional factors did emerge which did not fit into Holland's scheme. In half of the subgroups a cluster of items occurred which included looking in stores, doing personal shopping, riding around on a bicycle, and going to the store on errands. Although many of these are aspects of "consumer behavior," we classified this factor as a "wandering" dimension, reflecting the fact that all such activities involve getting out of the house, can be done individually, and are ways to spend excess time. In all subgroups except seventh and ninth grade white males, another set of activities emerged which reflected a concern for one's personal appearance -- caring for the hair, for one's clothes, and doing miscellaneous grooming tasks such as manicures. These latter factors, not interpretable in Holland's terminology, serve somewhat to round out our picture of adolescent activities or interests. They include dimensions of behavior which are important and meaningful to adolescents and complement those suggested by "pre-occupational interest" typologies. But, again, their presence did not cloud or preclude the emergence of the Holland-related factor structure.

4.2 EXTRA-OCCUPATIONAL MANIFEST INTERESTS OF YOUNG ADULTS

4.2.A. Young Adult Activities

The previous scales pertain to activity patterns among junior and senior high school adolescents. We now review parallel analyses for the subsample of youth surveyed three years after high school graduation.

Follow-up respondents were asked to report how many times during the month preceding the survey date they had undertaken each of 60 different sets of activities outside of work or outside of classes at school. The

Table 4.2.1 Leisure Time Pursuits of Young Adults in the AEQ Total Sample -- Items Means, Standard Deviations, Rank Order of Item Mean and Standard Deviation, Case Base for Item Statistics, and Holland Occupational Interest Code

LEISURE ACTIVITY AND VARIABLE ABBREVIATION		Item Mean	RANK Mean	Item S.D.	RANK S.D.	Item N	RIASEC Code
Read a newspaper	LEIS34	3.5905	1	.7138	54	2183	W
Stood or sat around with several friends and talked	LEIS38	3.4602	2	.7726	52	2188	X
Talked alone with someone my age of the opposite sex	LEIS16	3.4202	3	.9134	45	2192	X
Listened to records	LEIS47	3.2991	4	.8944	46	2183	W
Watched a newscast on TV	LEIS51	3.1457	5	.9770	38	2189	W
Discussed the Vietnam War	LEIS39	2.9803	6	.9560	40	2185	W
Watched a comedy program or variety program on TV	LEIS48	2.8793	7	1.0347	26	2187	W
Cleaned the house or apartment	LEIS60	2.8455	8	1.1438	8	2187	X
Went out on a date	LEIS55	2.8248	9	1.2462	2	2175	X
Bowled, played golf, swam, or played some other active sport	LEIS12	2.8164	10	1.0950	17	2184	W
Watched a mystery, western, or adventure program on TV	LEIS43	2.8110	11	1.0727	22	2185	W
Drove around	LEIS61	2.8094	12	1.1015	14	2188	W
Wrote a letter to someone	LEIS56	2.7881	13	1.1100	10.5	2185	S
Cooked or sewed	LEIS22	2.7638	14	1.2142	4	2193	X
Talked about politics	LEIS53	2.7467	15	1.0042	31	2179	W
Read a book	LEIS36	2.7148	16	1.1002	16	2181	W
Went to a movie	LEIS31	2.6676	17	.9842	34	2187	W
Studied	LEIS68	2.6235	18	1.3127	1	2186	W
Went for a walk	LEIS62	2.6204	19	1.0139	29	2184	W
Argued with someone	LEIS70	2.6019	20	.9331	43	2188	W
Had an alcoholic drink with someone	LEIS44	2.5910	21	1.0848	19	2181	W
Played with children (your own or others)	LEIS57	2.5341	22	1.1535	6	2185	S
Taught something to someone	LEIS21	2.5232	23	.9868	33	2194	S
Danced	LEIS29	2.5142	24	1.1469	7	2186	X
Entertained friends at home	LEIS67	2.4628	25	1.0392	25	2193	X
Listened to "live" music	LEIS15	2.4540	26	1.1056	12	2185	W
Went to a party	LEIS13	2.4250	27	1.0190	28	2188	X
Watched a play or documentary	LEIS35	2.3789	28	1.0874	18	2185	W
Took photographs	LEIS27	2.2883	29	1.1415	9	2189	W
Played cards -- bridge, poker, cribbage, etc.	LEIS18	2.2374	30	1.1782	5	2190	W
Watched a baseball game or other sports event on TV	LEIS33	2.1476	31	1.0814	20	2182	W
Cared for children or older adults	LEIS23	2.1464	32	1.2153	3	2192	S
Sang with some other people	LEIS30	2.0940	33	1.1010	15	2182	W

Table 4.2.1 (continued)

LEISURE ACTIVITY AND VARIABLE ABBREVIATION		Item Mean	RANK Mean	Item S.D.	RANK S.D.	Item N	RIASEC Code
Left town overnight	LEIS69	2.0885	34	1.1036	13	2180	W
Listened to a speech	LEIS64	2.0160	35	1.0090	30	2182	W
Read *Playboy* or *Cavalier*	LEIS24	1.8967	36	1.0713	23	2187	W
Went to a public library	LEIS42	1.8743	37	1.0733	21	2187	W
Went to a baseball game or other sports event	LEIS32	1.8649	38	1.0631	24	2184	W
Took a lesson for something	LEIS37	1.7971	39	1.1100	10.5	2178	W
Went to a play, lecture or concert	LEIS19	1.7816	40	.9777	37	2189	A
Worked on a car	LEIS49	1.7116	41	1.0194	27	2181	R
Hiked or camped	LEIS52	1.6836	42	.9525	41	2181	R
Built or repaired something of wood or metal	LEIS46	1.6810	43	.9799	35	2179	R
Played a musical instrument	LEIS26	1.5995	44	1.0001	32	2185	A
Met with a church group	LEIS63	1.5733	45	.9784	36	2182	S
Painted, drew, or sculptured	LEIS40	1.5642	46	.9628	39	2180	A
Rode a motorcycle	LEIS17	1.5257	47	.9334	42	2182	R
Worked in a garden	LEIS58	1.5238	48	.8709	48	2182	R
Went to a meeting of a social club or lodge	LEIS54	1.5064	49	.9327	44	2182	S
Built or repaired something electrical or electronic	LEIS11	1.4371	50	.8306	50	2187	I
Read a hot rod magazine	LEIS25	1.4181	51	.8362	49	2186	R
Fished or hunted	LEIS66	1.4122	52	.8726	47	2186	R
Worked for a community organization	LEIS45	1.3935	53	.8110	51	2183	S
Worked on a collection (stamps, coins, etc.)	LEIS41	1.3083	54	.7396	53	2183	W
Wrote a story, poem, play, or musical score	LEIS14	1.3031	55	.6995	55	2181	A
Read a comic book	LEIS59	1.2975	56	.6922	56	2178	W
Read *Jet*	LEIS20	1.2133	57	.6540	57	2171	W
Worked with ceramics or jewelry	LEIS50	1.1973	58	.6181	58	2184	A
Drove in a rally	LEIS28	1.1303	59	.4814	59	2180	W
Worked for a political organization	LEIS65	1.1058	60	.4176	60	2183	W

respondent was to indicate whether she had participated in that activity "not at all" (1), "once or twice" (2), "several times" (3), or "many times" (4).

The activities surveyed are listed in Table 4.2.1, together with the mean response, item standard deviation, case base for the computation of the statistics for each item, and the rank order of both the mean and standard deviation. The largest mean and largest standard deviation each received a rank of "1." Items are listed in Table 4.2.1 in rank order of popularity as indexed by size of mean.

The pattern of participation in these selected activities as reflected in the ordering in Table 4.2.1 immediately suggests two conclusions. First, these individuals are largely engaged in routine day-to-day activities -- reading newspapers, watching television, talking with friends, maintaining a home, occasionally reading a book or going to a movie for recreation. Somewhat less frequently, these young people go to parties, take out-of-town trips, and entertain friends. Organizational, mechanical, and artistic pursuits occupy only a small portion of their leisure time.

The second conclusion follows from the first. The list of activities to which the respondents were to react was heavily weighted with routine, day-to-day undertakings -- the sorts of activity in which persons could hardly avoid engaging during their leisure time. The items and responses to them have substantial face validity.

Comparing these items with those from the BEQ rated by judges according to their relevance to Holland's occupational types (see section 4.1, above), only about a third of the items appear to fit into this framework.

The final column of Table 4.2.1 reflects our a priori scale assignment of all 60 questions. Twenty items receive a Holland code (either R, I, A, S, E, or C); eight are coded "X"; and the remainder, receiving codes of "W" (for worthless), are items deemed irrelevant to our classification of interest patterns.

Before discussing the RIASEC items, attention should be directed to those activities receiving a code of "X." These are items which are excluded from our scales for young adults even though their counterparts from the high school questionnaires were retained in the a priori classification as either type S, Social, or type C, Conventional, interests. The item ranked number 14, "cooked or sewed," was excluded because it crossed the classification scheme between type S and type C. Another six "X" coded items were excluded because it was felt that participation in such activities -- dating, talking with friends, entertaining, and general public sociability -- among college students and workers aged 21 or 22, both single and married, did not so much imply personal dispositions as it did maturational and social development. A final activity, "cleaned the house or apartment," ranked number eight by mean response, was excluded for similar reasons. Specifically, most respondents at this age probably are living in residences for which they have major responsibility, and housecleaning is no longer as much a voluntary interest manifestation as it is a virtual necessity. Because we are unable to distinguish between persons according to their actual interest in such an undertaking, we excluded it from consideration.

4.2.B. The Structure of Extra-Occupational Interests

Three Holland-type scales can be constructed from the 20 items coded in the RIASEC scheme. As was the case with the pre-occupational interests of adolescents, three Holland types -- I, E, and C -- are sorely under-represented in the items included in the follow-up questionnaire.

Table 4.2.2 contains the inter-item correlations of the seven activities rated as indexing Realistic interests, as well as their correlations with the single item rated as tapping Investigative pursuits. The three highest correlations involving this latter type of interest (LEIS1 with LEIS25, LEIS46, and LEIS49) are the apparent result of the common theme of auto repair. Given this overlap, all eight items will be considered to tap Realistic leisure pursuits among young adults.

Item inter-correlations for the Artistic and Social activities are presented in Tables 4.2.3 and 4.2.4, respectively. Correlations among the Realistic items are substantial, those among the Artistic less so, while the relationships among items indexing Social pursuits are modest at best and reflect two types of activity captured under one scale -- orientation toward children and organizational membership. All correlations are, however, in the expected direction and indicate scale coherence.

Although these 20 items can be meaningfully arranged into three scales indexing Realistic, Artistic, and Social pre- and extra-vocational interests, they are not representative of the actual activity patterns in which young adults participate as reflected by the entire battery of 60 items. A perusal of the final column of Table 4.2.1 supports the conclusion that average participation in these RIASEC activities is low and, furthermore, person-to-person variation in this level of participation is relatively limited.

Table 4.2.2 Item-Intercorrelations for Realistic Interest Indicators -- Total AEQ Sample*

	LEIS17	LEIS25	LEIS46	LEIS49	LEIS52	LEIS58	LEIS66	LEIS11**
LEIS17	1.00							
LEIS25	.299	1.00						
LEIS46	.261	.437	1.00					
LEIS49	.313	.533	.560	1.00				
LEIS52	.278	.210	.283	.195	1.00			
LEIS58	.104	.121	.236	.181	.265	1.00		
LEIS66	.213	.315	.357	.354	.400	.272	1.00	
LEIS11**	.218	.391	.592	.516	.202	.108	.301	1.00

---

*See Table 4.2.1 for item abbreviations; pairwise present correlations where the individual item case base ranged from 2171 to 2194.

**LEIS11 is the single Investigative item.

Table 4.2.3 Item-Intercorrelations for Artistic Interest Indicators -- Total AEQ Sample*

	LEIS14	LEIS19	LEIS26	LEIS40	LEIS50
LEIS14	1.00				
LEIS19	.331	1.00			
LEIS26	.311	.280	1.00		
LEIS40	.269	.235	.164	1.00	
LEIS50	.174	.173	.122	.357	1.00

---

*See Table 4.2.1 for item abbreviations; pairwise present correlations where the individual item case base ranged from 2171 to 2194.

/

Table 4.2.4 Item-Intercorrelations for Social Interest Indicators -- Total AEQ Sample*

	LEIS21	LEIS23	LEIS45	LEIS54	LEIS56	LEIS57	LEIS63
LEIS21	1.00						
LEIS23	.275	1.00					
LEIS45	.258	.175	1.00				
LEIS54	.198	.099	.433	1.00			
LEIS56	.151	.163	.174	.139	1.00		
LEIS57	.211	.662	.170	.098	.149	1.00	
LEIS63	.139	.156	.284	.261	.198	.187	1.00

---

*See Table 4.2.1 for item abbreviations; pairwise present correlations where the individual item case base ranged from 2171 to 2194.

In light of the relatively small amount of variation displayed by Holland-type items, it would be surprising if a factor analysis of all 60 items produced RIASEC clusters. The results of such a factor analysis (oblique with varimax rotation using the eigenvalue ≥ 1 extraction criterion) are presented in Table 4.2.5. Thirteen factors had eigenvalues greater than or equal to unity and accounted for approximately 54 percent of the total inter-item variation. Of these, four factors easily recognizable as Holland clusters emerge despite the competing larger variation in non-Holland activity items. Factor II is clearly a mechanical or Realistic cluster; factors VII and XIII capture the two separate aspects of Social orientation mentioned above; and factor IX reflects Artistic pursuits. The loadings greater than or equal to .30 in absolute magnitude on these factors do not exhaust our *a priori* candidates for scale items nor do they totally exclude non-Holland items. However, the emergence of these factors in the total young adult sample strongly supports our *a priori* judgements of item utility. The other, non-Holland factors illustrate our comments concerning the activity patterns displayed in Table 4.2.1. Young adults vacation (I), watch television (III), interact with peers (IV and XI), discuss political events (V), go to church (VI), follow sports (X), and pursue academic interests (VIII and XII).

Based on these results *and* our *a priori* judgements of item appropriateness, three scales were constructed to reflect Realistic, Artistic, and Social leisure activities of young adults -- REAL69, ARTS69, and SOCL69, respectively -- employing the indicators isolated in Tables 4.2.2 through 4.2.4, above. For each youth, the actual responses (1 through 4)

Table 4.2.5 Factor Structure for Leisure Pursuits of Young Adults -- [a,b]
AEQ Total Sample

FACTOR I (16.9)
NON-HOLLAND- Vacation

R	LEIS52	.513	Hiked or camped
	LEIS62	.461	Went for a walk
S	LEIS56	.387	Wrote a letter
	LEIS69	.352	Left town overnight

FACTOR II (6.6) (R)
HOLLAND- Realistic

R	LEIS49	.810	Worked on a car
R	LEIS46	.723	Built/repaired something metal
I	LEIS11	.702	Built/repaired something electrical/electronic
R	LEIS25	.600	Read hot rod magazine
	LEIS24	.336	Read Playboy or Cavalier

FACTOR III (5.5)
NON-HOLLAND- Television

	LEIS48	.832	Watched comedy/variety TV
	LEIS43	.808	Watched mystery/western TV
	LEIS51	.472	Watched newscast TV
	LEIS35	.321	Watched documentary/play TV
	LEIS33	.315	Watched sports event TV

FACTOR IV (4.1)
NON-HOLLAND- Socializing

	LEIS29	.597	Danced
	LEIS55	.596	Went on a date
	LEIS13	.573	Went to a party
	LEIS16	.482	Talked alone with opposite sex
	LEIS44	.410	Had alcoholic drink
	LEIS15	.348	Listened to "live" music
	LEIS47	.307	Listened to records
	LEIS31	.302	Went to a movie

FACTOR V (3.6)
NON-HOLLAND- Political

	LEIS53	.810	Talked about politics
	LEIS39	.728	Discussed the Vietnam war
	LEIS64	.382	Listened to a speech
	LEIS51	.303	Watched newscast on TV

FACTOR VI (2.8)
NON-HOLLAND- Religious

S	LEIS63	.569	Met with a church group
	LEIS44	-.352	Had an alcoholic drink
	LEIS30	.322	Sang with some other people

FACTOR VII (2.3) (S)
HOLLAND- Social

S	LEIS23	.890	Cared for children/seniors
S	LEIS57	.770	Played with children
S	LEIS21	.303	Taught something to someone

FACTOR VIII (2.2)
NON-HOLLAND- Student

	LEIS68	.32	Studied

FACTOR IX (2.1) (A)
HOLLAND- Artistic

A	LEIS40	.478	Painted, drew, sculpted
A	LEIS50	.462	Worked with ceramics
	LEIS41	.348	Worked on a collection
A	LEIS14	.313	Wrote story/play/music

FACTOR X (2.0)
NON-HOLLAND- Sports

	LEIS32	.599	Went to sports event
	LEIS33	.579	Watched sports on TV
	LEIS12	.374	Engaged in some active sport
	LEIS18	.303	Played cards

Table 4.2.5 (continued)

FACTOR XI (1.8)
NON-HOLLAND- Housekeeping

	LEIS60	.849	Cleaned the house
	LEIS22	.637	Cooked or sewed
	LEIS67	.356	Entertained friends at home

FACTOR XII (1.8)
NON-HOLLAND- Educational

	LEIS68	.430	Studied
A	LEIS26	.399	Played musical instrument
	LEIS36	.365	Read a book
	LEIS42	.361	Went to public library
A	LEIS14	.326	Wrote story/play/music
	LEIS37	.315	Took a lesson for something

FACTOR XIII (1.8) (S)
HOLLAND- Social

S	LEIS54	.457	Went to club or lodge meeting
S	LEIS45	.387	Worked for community group
	LEIS65	.361	Worked for political group
	LEIS68	.306	Studied

---

[a] Sample size for particular item responses varies between 2171 and 2194, pairwise present correlations. Thirteen factors had eigenvalues greater than or equal to 1.00, and accounted for 53.5% of the total variance. The oblique solution resulted in inter-factor correlations of less than .30 in absolute magnitude with the following six exceptions: r(7,11)=.47, r(3,7)=.35, r(1,2)=.31, r(2,10)=-.30, r(3,10)=-.31, r(5,12)=-.34. Factors 4, 6, 9, and 10 have been reflected for presentation in this table.

[b] Holland codes for the items which were a priori assigned RIASEC codes are recorded to the extreme left of each factor. Numbers in parentheses are the percents of total variance accounted for by each factor. Letters in parentheses are the summary Holland descriptions of the factors. Factors not readily interpretable in the Holland scheme are labeled as NON-HOLLAND factors, those which are interpretable as HOLLAND factors.

to each item in a scale were summed and divided by the number of items for which there were data. In order to insure that all scale scores on a particular dimension were approximately equally reliable, responses to at least 60 percent of the items in each scale had to be available for the scale to be constructed. Thus, the number of items in each scale is as follows: REAL69, 5 or more items; ARTS69, 3 or more items; SOCL69, 5 or more items.

Table 4.2.6 gives the percentages of persons answering the items for each scale. Approximately 96 percent of all persons in our follow-up sample supplied data for all items in any given scale. In light of these percentages it is unnecessary to examine patterns of non-response.

As might be expected, males and females differ markedly in their average interest scale scores, dispersion of scores, and relationships among interests (see Table 4.2.7). Males have higher average scores and a larger standard deviation than do females on the Realistic interests dimension. Little difference exists between the sexes in the Artistic dimension, and females demonstrate a higher level of Social interests than do males. The relationships among interests within each sex relative to the correlations obtained in the total sample suggest substantial sex effects on interest scores. Although the relationships among these three interest dimensions within each sex are moderate and positive, total sample correlations between Realistic and Artistic and between Realistic and Social interests are smaller than either of the corresponding within-sex coefficients. Sex, therefore, acts as a "suppressor" variable of considerable import.

Although the interest scales created here do not correspond exactly to those constructed to measure pre-occupational interests during the junior

Table 4.2.6 Percentage and Number of Young Adults Furnishing Data on a Given Number of Items Within the Realistic, Artistic, and Social Interest Scales -- AEQ Sample

	REAL69[a] Realistic Scale		ARTS69[a] Artistic Scale		SOCL69[a] Social Scale	
0 Items	1.6%	35	1.7%	38	.0%	33
1 Item	.2%	5	.0%	1	.0%	0
2 Items	.0%	1	.4%	10	.5%	12
3 Items	.4%	10	.2%	5	.1%	2
4 Items	.0%	0	1.2%	27	.1%	2
5 Items	.0%	1	96.4%	2155	.3%	7
6 Items	.1%	3			1.3%	30
7 Items	2.0%	44			96.2%	2150
8 Items	95.6%	2137				

---

[a] REAL69 had 8 possible responses; ARTS69 had 5 possible responses; SOCL69 had 7 possible responses; Total N was 2236.

Table 4.2.7 Means of, Standard Deviations of, and Correlations Among the Realistic, Artistic, and Social Interest Scales for the Total AEQ Sample and for Sex Subgroups

		MALES	FEMALES	TOTAL
Mean REAL69		1.862	1.298	1.549
S.D. REAL69		.633	.360	.573
Mean ARTS69		1.454	1.520	1.491
S.D. ARTS69		.523	.556	.543
Mean SOCL69		1.888	2.210	2.067
S.D. SOCL69		.552	.591	.596
Correlation REAL, ARTS		.299	.373	.244
	N	(971)	(1213)	(2184)
Correlation REAL, SOCL		.412	.391	.193
	N	(972)	(1213)	(2185)
Correlation ARTS, SOCL		.445	.354	.393
	N	(971)	(1213)	(2185)

and senior high school years, the items employed and the relationships among scales are sufficiently similar across the secondary and post-secondary school constructions for them safely to be considered as tapping the same Holland RIASEC dimensions. The stability of interests over time is considered in the following section.

4.3 CONTINUITY OF INTERESTS ACROSS THE JUNIOR AND SENIOR HIGH SCHOOL YEARS AND FROM HIGH SCHOOL TO COLLEGE OR THE WORKPLACE

Over two-year periods in an adolescent's life, pre-occupational activity patterns are reasonably stable. Considering total sample figures first (see Table 4.3.1), Realistic and Conventional interests are the most consistent across any time period and become slightly more stable in the later years of high school (r_{xy}^2 = .44 and .48, respectively). Artistic and Social interests are somewhat less so, although 35 and 43 percent of the variance, respectively, in these eleventh grade interests are explained by their parallel ninth grade expressions. Investigative interests in grades seven and nine are useful in predicting ninth and eleventh grade pursuits, while Enterprising behaviors in junior high school are only slightly related to those evidenced in the senior high school years. These "stability" patterns parallel the rank orders of the internal consistency coefficients calculated for these indexes (see Table 4.1.19), with the exception that measured Conventional interests are more stable than might be expected from the consistency of the scale.

The pattern of the relationships between within-sex and total sample correlations parallels the sex differences in mean scale scores noted earlier

Table 4.3.1 Cross-Time Correlations of Pre-Occupational Interest Scales

GROUP4	MALES		FEMALES		TOTAL		TOTAL
7th to 9th Grade	r_{xy}	N	r_{xy}	N	r_{xy}	N	r^2_{xy}
REAL*	.459	1623	.361	1813	.639	3436	.408
INVE	.482	1623	.413	1813	.488	3436	.238
ARTS	.518	1623	.545	1813	.554	3436	.307
SOCL*	.465	1623	.517	1813	.577	3436	.333
ENTR	.265	1623	.296	1813	.283	3436	.080
CONV*	.438	1623	.338	1813	.627	3436	.393
9th to 11th Grade							
REAL*	.479	2295	.427	2438	.665	4733	.442
INVE	.487	2295	.434	2439	.496	4734	.246
ARTS	.527	2300	.622	2439	.595	4739	.354
SOCL*	.479	2301	.548	2443	.656	4744	.430
ENTR	.306	2294	.346	2429	.330	4723	.109
CONV*	.449	2290	.441	2435	.690	4725	.476
7th to 11th Grade							
REAL*	.328	1633	.270	1806	.549	3439	.301
INVE	.341	1633	.260	1806	.346	3439	.120
ARTS	.419	1633	.452	1806	.464	3439	.215
SOCL*	.323	1634	.403	1808	.480	3442	.230
ENTR	.192	1629	.254	1802	.229	3431	.052
CONV*	.353	1628	.294	1806	.589	3434	.347
GROUP2	MALES		FEMALES		TOTAL		TOTAL
11th to 3 Years Out H.S.	r_{xy}	N	r_{xy}	N	r_{xy}	N	r^2_{xy}
REAL	.307	680	.212	1001	.499	1681	.249
ARTS	.374	681	.452	1002	.422	1683	.178
SOCL	.224	680	.216	1003	.315	1683	.099

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*Indicates scales for which notable sex effects were documented, see Table 4.1.18.
See text for abbreviations.

(see Table 4.1.18). For Realistic, Social, and Conventional interests, total sample stability exceeds markedly that evidenced within either sex group. Enterprising total correlations, however, are virtual averages of the parallel within-sex estimates; and Artistic and Investigative total stabilities range between averages of and slight increases over sex-specific estimates. These data suggest that sex will be almost as powerful a predictor of senior high school manifest interests as will be junior high school activities when the more stable and reliable interests are being investigated.

In all instances, the correlations of parallel scales from the ninth to the eleventh grades exceed those evidenced between the two earlier administrations. Likewise the four year, seventh to eleventh grade, stability coefficient for each scale is smaller than that found to exist between the seventh and ninth grades.[5] Thus, it seems that adolescents are indeed engaging in some testing and experimenting, and beginning to crystallize at least their activity preferences by the late high school years. These differences in the stability coefficients are not, however, extremely large and, furthermore, their absolute magnitudes suggest that even at age 16 and 17, youths' interests are still very much in a state of flux. The GROUP 2 stability estimates (for eleventh grade to three years post-high school) are confounded somewhat by scale differences not found in the earlier four-year correlations. Nonetheless, they suggest that additional changes occur in interest patterns when the adolescent leaves high school and enters college or the world of work.

In summary, both sex and prior interests are modestly effective predictors of later pre-occupational pursuits. Both of these circumstances offer support for the external validity of the scales as constructed to tap the Holland occupational interest types. Of the scales constructed, the Realistic, Social, and Artistic are the most empirically convincing, with the Conventional and Investigative being less so, and the Enterprising remaining largely unproductive. In Chapter 8 we will briefly explore the relationship of these interest scales to adolescents' occupational aspirations. Data to be presented there offer additional support for the utility of these scales in differentiating among the Holland theoretical dimensions. Chapter 6 examines the determinants of these manifest interests and their consequences for school attainments and work values. In later analyses (Chapters 10 and 11) we explore their impact on work routines and returns.

FOOTNOTES

[1] For exact specification of the techniques employed see Nie, et al., (1975:468-514) for the factoring procedure defined by: TYPE=PA2/ROTATE=OBLIQUE/ with default options for "delta" and NFACTORS."

[2] See Table 4.1.5 for the rank orders of the means of these 46 activities for males and females in grades 7, 9, and 11.

[3] "Cleaning" had been designated by our judges as indexing Conventional interests.

[4] A second analysis, performed but not discussed here, employs all "passive" interests (reading, listening to music, watching television). See Appendix C, Tables C.13 through C.24 for the analytical results.

[5] This is exactly what one would expect from a simple chain model with fallible indicators. However, as analyses reported in Chapter 6 demonstrate, a chain model is not an accurate representation of the effects of earlier upon subsequent pre-occupational manifest interests.

Chapter 5 -- Work Values, Returns, and Routines

In the previous chapter we sought to differentiate leisure time pursuits into meaningful clusters of pre-occupational interests, activities which are not directly related to occupational undertakings but from which career-relevant information about personal performance and preference could be acquired. In the present chapter we consider aspects of work experience itself.

Focusing primarily on presently employed youth from the AEQ follow-up sample, this chapter develops scales which characterize their work values, the levels and kinds of rewards derived from their labor, and the work routines of their jobs. In later chapters we consider how work routines influence work rewards and the extent to which both can be anticipated from earlier manifest interests.

In the next section we develop scales to characterize the extrinsic and intrinsic work rewards (Wise, Charner, Randour, 1976) realized by these youth through their employment and consider how well these correspond to the work benefits that they, as individuals, value personally. Following this, we next organize the work "routines" engaged in by these youth and use this information on job activities to rate their occupations on Holland's (1976) occupational dimensions. Thus, occupations will be classified according to the types of routines or functions they entail.[1] Substantive analyses of the relations among the returns and routines dimensions of work, as well as of the dependence of both on interests and school experiences, will be reserved for Chapters 10 and 11.

5.1 REWARDS ACCRUING FROM IDEAL AND REAL JOBS AMONG YOUNG ADULTS THREE YEARS OUT OF HIGH SCHOOL -- WORK VALUES AND RETURNS

The perspectives on the dimensions of work offered by Lofquist and Dawis (1969) and by Wise, Charner, and Randour (1976) together identify five clusters of extrinsic and intrinsic rewards of work. These are presented in Table 5.1.1 which includes: (1) the identifier used in the present research (underlined content); (2) the label given to the dimension by Wise, Charner, and Randour (in quotations); (3) the dimensions identified by Lofquist and Dawis which are subsumed under each cluster (bold face entries); and (4) the variable abbreviations for items included in the AEQ instrument which on a priori grounds appear to be indicators of each cluster (bold face five-letter entries preceded by a number in parentheses). We will first describe the importance of these rewards -- both ideal and real -- among the young adults in our sample. We then will (1) discuss each of the clusters; (2) examine the inter-item correlations for items within clusters; (3) present factor analyses supporting these distinctions; and (4) develop and describe the scales constructed therefrom.

5.1.A. Relative Importance of Rewards Dimensions

Individuals in the follow-up sample who either were presently working

Table 5.1.1 Conceptual Dimensions and A Priori Indicators of Extrinsic and Intrinsic Returns to Work Among Young Adults Three Years Out of High School -- For the Total AEQ Sample[a]

(A)	(B)	(C)
Extrinsic	Intrinsic-Social Service	Intrinsic-Engagement
"Earnings"	"Social Benefit"	"Satisfaction"*
ADVANCEMENT POLICIES COMPENSATION SECURITY	MORAL VALUES SOCIAL SERVICE	ABILITY UTILIZATION ACTIVITY CREATIVITY VARIETY ACHIEVEMENT RECOGNITION
(1) INSUR (2) RETIR (3) VACAT (4) STEDY (5) GDPAY (6) WORLD (7) PROMO (8) PLACE	(1) SOCIE (2) HELPO	(1) VARIE (2) HOWGD (3) CHLNG (4) DIFFR (5) INTER

(D)	(E)	(F)
Intrinsic-Associations	Intrinsic-Power	Intrinsic-Sinecure
"Associations"	"Power and Autonomy"	"Routines" -- Complexity
CO-WORKERS SUPERVISION-- HUM. REL. SUPERVISION-- TECHNICAL WORKING CONDITIONS	AUTHORITY RESPONSIBILITY SOCIAL STATUS AUTONOMY INDEPENDENCE	
(1) CONDT (2) GDBOS (3) PEOPL	(1) RESPC (2) CHARG (3) SUPRV (4) DECIS (5) ALONE	(1) EZWRK (2) HOURS

---

[a] Underlined content reflects the labels given to the dimensions in the present research. "Content in quotations" reflects the labels given to the dimensions by Wise, et. al. (1976). BOLD FACE content reflects the dimensions suggested by Lofquist and Dawis (1969). BOLD FACE five-character entries preceded by a number in parentheses reflect items available in the AEQ data to tap these dimensions, clustered into dimensions on an a priori theoretical basis. Dimension F is a residual group formed empirically.

*Dimension (C) has been labeled "Engagement," although Wise et. al. (1976) did not specifically list this as an intrinsic return to work.

or were planning at some future time to work outside of the home[2] were requested to respond to a list of 25 work attributes prefaced by the following instructions:

> Suppose you were offered a permanent job in a city far enough away so that you would have to move if you took the job. Suppose also that you could move if you wanted to and have finished all the school or college you plan to get. Circle the number after each statement below to show how important that reason would be to you when deciding whether to take the job.

Response options ranged from "1= Not Important" to "5= Very Important." The items themselves are quite similar to those used in the *Minnesota Importance Questionnaire 1967 Revision* (see Lofquist and Dawis, 1969, Appendix), and clearly are intended to tap work *values*.

The 21 scales developed by Lofquist and Dawis (1969) are collapsed for our present purposes into the five clusters (A through E) in Table 5.1.1.[3] Each of the 25 work value items in the AEQ instrument has been assigned to a particular cluster on *a priori* grounds. The means, standard deviations, rank orders of both, case bases for these item statistics, and the assigned cluster for each of these items are given in Table 5.1.2. A quick inspection of both the rank order and the absolute value of these averages provides an interesting profile of the work values of our young adults. There is agreement that easy work and short hours are quite *unimportant* to their choice of an ideal job. Authority over others is of only moderate importance overall, but there exists marked disagreement over the salience of this dimension (see the rank orders of the standard deviations of the E items). Intrinsic rewards in the form of "engagement" and

Table 5.1.2 Work Return Characteristics of the Ideal Job (Work Values) of Young Adults in the AEQ Total Sample -- Item Means, Standard Deviations, Rank Order of Item Mean and Standard Deviation, Case Base for Item Statistics, and Cluster Code[a]

WORK VALUE CHARACTERISTIC AND VARIABLE ABBREVIATION		Item Mean	RANK Mean	Item S.D.	RANK S.D.	Item N	CODE
Interesting work	INTER	4.7250	1	.6000	25	1920	C
Steady work	STEDY	4.4859	2	.8189	22	1912	A
Good people to work with	PEOPL	4.3876	3	.7554	24	1922	D
Good pay	GDPAY	4.3076	4	.8113	23	1915	A
A good boss	GDBOS	4.2204	5	.8622	21	1919	D
Good chances for promotion or advancement	PROMO	4.1745	6	.9285	18	1920	A
Pleasant working conditions	CONDT	4.1469	7	.8874	20	1913	D
A good place to live	PLACE	4.1064	8	.9501	14	1918	A
A chance to see what I can do -- how good I am	HOWGD	4.0964	9	.9334	17	1919	C
A chance to move up in the world	WORLD	4.0459	10	1.0341	8	1916	A
A job where you have to be good to handle it	CHLNG	4.0360	11	.8975	19	1916	C
A chance to help other people	HELPO	4.0063	12	.9483	15	1909	B
A chance to be useful to society	SOCIE	3.9427	13	1.0473	6	1919	B
Variety in the job -- different kinds of work	VARIE	3.9207	14	.9890	13	1917	C
A chance to do things my own way -- make my own decisions	DECIS	3.6684	15	.9994	12	1921	E
A chance to try different things to see how I like them	DIFFR	3.6444	16	1.0079	11	1918	C
A good retirement plan	RETIR	3.6203	17	1.2217	1	1920	A
Good vacations	VACAT	3.6040	18	1.0240	10	1919	A
Medical insurance and life insurance paid by the company	INSUR	3.4260	19	1.1803	4	1913	A
A chance to be in charge of things	CHARG	3.3586	20	1.0318	9	1916	E
A chance to direct or supervise others	SUPRV	3.2113	21	1.1064	5	1921	E
A job that means I'm looked up to by other people	RESPC	3.1172	22	1.1811	3	1912	E
A chance to work by myself without alot of other people around	ALONE	2.7603	23	1.1886	2	1919	E
Short working hours	HOURS	2.5885	24	1.0448	7	1920	F
Easy work	EZWRK	2.0005	25	.9418	16	1905	F

---

[a] Cluster codes are taken from Table 5.1.1 above. Individuals who never planned to work were directed to skip these items, thus the smaller sample sizes for these relative to other items.

"associations" as well as "extrinsic" salary returns are generally highly valued by all young adults (large means and small standard deviations).

Respondents who were employed at the time of the survey also were requested to rate the same 25 work rewards with reference to their present jobs. These items, then, are analogous to those on the Minnesota Satisfaction Questionnaire 1967 Revision (see Lofquist and Dawis, 1969, Appendix) which are answered with reference to: "How satisfied am I with this aspect of my job?" However, the instructions prefacing this section of the AEQ are somewhat ambiguous:

> If you were offered a good job in another city, as in the question just before this one, your decision to move would depend partly on how well you like your present job. Circle the number on each line below to show how important each of the things listed is in your present job. If it isn't part of your job at all or is an unimportant part, circle number 1. If it's a big part of your present job, circle 4 or 5. If it's there, but not very important to you, circle 2 or 3. (emphases added)

The two criteria underlined in the above instructions are potentially contradictory. There can be aspects of a job which are "very important" in the sense of being "a big part" of the job, but which the individual finds basically unsatisfying. A pair of items, "easy work" and "variety in the job," can be used to exemplify this possible confusion. Perhaps the individual's job is characterized by extremely easy work which is quite varied. The person, however, does not like variety and does not find easy work particularly appealing. That person, responding with reference to "importance -- big part" would rate these items as either 4 or 5, or perhaps 3; whereas, if responding according to the "like your present job" (or satisfaction) criterion, the other end of the continuum would be the more appropriate.

The instructions appear to assume, as do many sociologists and vocational psychologists, that the attributes listed are universally desirable and that "importance" of the characteristic in the job and the "liking" of that aspect of the job are equivalent. In summary, the instructions were poorly written. This unfortunate circumstance aside, we will use these responses as at least rough indicators of satisfaction with the rewards accruing to actual employment situations. This obviously was the intent of those responsible for instrumentation.

The rank ordering of the means (given in Table 5.1.3) suggests that respondents actually did manage to rate these characteristics according to some mixture of frequency and satisfaction. The means tend to fall in the mid-range with large standard deviations. Whereas almost half (12 of 25) of these reward attributes had a mean greater than 4.0 when rated in reference to the ideal job, as returns realized through work only 3 have such large means. The range of mean ratings for ideal job rewards is almost 2.75; for actual job reward means, the range is less than 2.0. Furthermore, a detailed comparison of parallel items in Tables 5.1.2 and 5.1.3 reveals that for all but one item (EZWRK) the ideal mean is larger than the real mean; and in all instances the ideal standard deviation is smaller than the actual deviation. Therefore, if these actual work rewards are thought to reflect satisfaction with job characteristics, young peoples' jobs fall short of their employment ideals. Throughout the remainder of the text, scales describing job attributes of the actual employment situation

Table 5.1.3 Work Return Characteristics of the Real Job (Work Returns) of Young Adults in the AEQ Total Sample -- Item Means, Standard Deviations, Rank Order of Item Mean and Standard Deviation, Case Base for Item Statistics, and Cluster Code[a]

WORK VALUE CHARACTERISTIC AND VARIABLE ABBREVIATION		Item Mean	RANK Mean	Item S.D.	RANK S.D.	Item N	CODE
Steady Work	STEDY	4.3368	1	1.0107	25	1164	A
Good people to work with	PEOPL	4.0602	2	1.0445	24	1163	D
A good boss	GDBOS	4.0068	3	1.1645	21	1169	D
Interesting work	INTER	3.9055	4	1.1696	20	1174	C
Pleasant working conditions	CONDT	3.7945	5	1.1460	22	1168	D
Good pay	GDPAY	3.7601	6	1.2550	16	1163	A
Variety in the job -- different kinds of work	VARIE	3.6310	7	1.2893	13	1168	C
A job where you have to be good to handle it	CHLNG	3.5809	8	1.2203	19	1162	C
A good place to live	PLACE	3.5685	9	1.4479	4	1168	A
A chance to see what I can do -- how good I am	HOWGD	3.5632	10	1.2935	12	1170	C
A chance to help other people	HELPO	3.4323	11	1.3189	10	1159	B
Good chances for promotion or advancement	PROMO	3.3339	12	1.4594	3	1165	A
Good vacations	VACAT	3.2795	13	1.3878	7	1170	A
A chance to move up in the world	WORLD	3.2102	14	1.4308	5	1161	A
A chance to be useful to society	SOCIE	3.1914	15	1.3923	6	1165	B
A chance to do things my own way -- make my own decisions	DECIS	3.1827	16	1.2578	15	1171	E
Medical insurance and life insurance paid by the company	INSUR	3.1682	17	1.5606	2	1165	A
A good retirement plan	RETIR	3.1279	18	1.5860	1	1165	A
A chance to try different things to see how I like them	DIFFR	3.1231	19	1.3732	8	1162	C
A chance to be in charge of things	CHARG	3.0266	20	1.2522	17	1167	E
A chance to direct or supervise others	SUPRV	2.8052	21	1.3012	11	1165	E
A job that means I'm looked up to by other people	RESPC	2.7843	22	1.2843	14	1182	E
A chance to work by myself without alot of other people around	ALONE	2.5541	23	1.3275	9	1164	E
Short working hours	HOURS	2.4424	24	1.2222	18	1164	F
Easy work	EZWRK	2.3672	25	1.1346	23	1171	F

---

[a] Cluster codes are taken from Table 5.1.1 above. Individuals who were not employed at the present time were directed to skip this section of items, thus the smaller sample sizes for these relative to other items.

will be referred to as "work returns" and scales built from attributes of ideal jobs as "work values."

Therefore, returning to Table 5.1.3, we see that employed youth in this sample are generally working in jobs that are steady, interpersonally rewarding (cluster D), somewhat interesting and engaging (cluster C) and which hold reasonable promise of upward mobility (cluster A). On the other hand, these jobs offer only moderate opportunity to exercise responsibility or authority (cluster E). In effect, these young people are employed at low level positions in the work hierarchy, whatever their other qualities.

5.1.B. The Structure of Work Values and Returns

The intercorrelations among these dimensions of occupational reward are considered next. Items identified as being potential indicators of "extrinsic" rewards of work (see Table 5.1.4) are moderately to highly intercorrelated among both values and returns, with the average coefficient for the latter (.47) being slightly larger than that for the former (.42). One might say that, although the rewards to actual jobs do not measure up (by mean rating) to the work values of young adults, these returns nevertheless are patterned in very much the same way as are the youth's work values.

Table 5.1.5 present intercorrelations among items presumed to tap both "social service" and "engagement" rewards of work. Helping others and being a benefit to society are quite likely to index a common value

Table 5.1.4 Item-Intercorrelations for the Indicators Tapping "Earnings" Returns to Work --[a] Total AEQ Sample

IDEAL JOB — REAL JOB

	INSUR	RETIR	VACAT	STEDY	GDPAY	WORLD	PROMO	PLACE
INSUR	1.00	.681	.587	.249	.369	.404	.476	.397
RETIR	.587	1.00	.670	.325	.475	.538	.562	.519
VACAT	.487	.567	1.00	.323	.479	.511	.547	.531
STEDY	.260	.350	.273	1.00	.338	.312	.321	.335
GDPAY	.348	.392	.442	.390	1.00	.560	.446	.486
WORLD	.303	.405	.356	.357	.562	1.00	.819	.492
PROMO	.310	.409	.378	.369	.524	.779	1.00	.490
PLACE	.320	.483	.466	.355	.471	.396	.387	1.00

---

[a] Coefficients above the diagonal refer to inter-correlations among the work returns of actual job, those below the diagonal refer to inter-correlations among the work values of ideal job. All coefficients are pairwise present: See Table 5.1.2 and 5.1.3 for the sample sizes for individual items and the employment characteristics of respondents.

Table 5.1.5 Item-Intercorrelations for the Indicators Tapping "Social Service" and "Engagement" Returns to Work -- Total AEQ Sample[a]

IDEAL JOB REAL JOB

	SOCIE	HELPO	VARIE	HOWGD	CHLNG	DIFFR	INTER
SOCIE	1.00	.692	.351	.514	.446	.433	.491
HELPO	.634	1.00	.340	.499	.450	.483	.484
VARIE	.214	.177	1.00	.494	.422	.556	.514
HOWGD	.361	.310	.217	1.00	.666	.571	.590
CHLNG	.258	.252	.222	.472	1.00	.497	.598
DIFFR	.250	.351	.425	.347	.278	1.00	.509
INTER	.231	.208	.194	.255	.274	.170	1.00

---

[a] Coefficients above the diagonal refer to inter-correlations among the work returns of actual job, those below the diagonal refer to inter-correlations among the work values of ideal job. All coefficients are pairwise present. See Tables 5.1.2 and 5.1.3 for the sample sizes for individual items and the employment characteristics of respondents.

structure and are equally likely to be represented in a particular job. However, the correlations among items tapping "engagement" and their relations to "social service" indicators differ markedly between values and returns. The various aspects of "engagement" in actual employment situations are quite strongly related (average coefficient is .54) -- jobs are rather consistent in the degree to which they offer variety, challenge, and stimulate interest. Furthermore, this set of intrinsic returns to work tends to overlap with the opportunity offered by the job to provide "social service" (cross-cluster average correlation is .45). The similarity of average within-cluster (.54 and .69) and between-cluster correlations (.45) suggests that these dimensions could be combined when characterizing the reward dimensions of actual jobs.

The situation is quite different for work values, however. The average item intercorrelation of the "engagement" indicators among work values is only .29, indicating markedly less coherence in values than in returns and perhaps that finer distinctions are drawn in values. And although the average intercorrelation of the "engagement" indicators (.29) is not noticeably different from the average cross-cluster correlation (.26) with the "social service" items, the latter are themselves much more highly associated (.63). Hence, young adults do distinguish between these two types of intrinsic work rewards in their value structures despite the fact that such rewards are confounded in their actual job experiences.

When examining interpersonal or "association" rewards of work (Table 5.1.6), we again find more coherence among job returns (average intercorrelation is .52) than in value structures (average coefficient is .39).

Table 5.1.6 Item-Intercorrelations for the Indicators Tapping "Interpersonal" Returns and those Indexing "Sinecure" of Work--

Total AEQ Sample[a]

IDEAL JOB					REAL JOB
	CONDT	GDBOS	PEOPL	EZWRK	HOURS
CONDT	1.00	.474	.533	.171	.126
GDBOS	.353	1.00	.565	.053	.027
PEOPL	.387	.435	1.00	.039	.047
EZWRK	.211	.081	.054	1.00	.424
HOURS	.188	.110	.107	.394	1.00

---

[a] Coefficients above the diagonal refer to inter-correlations among the work value characteristics of actual job, those below the diagonal refer to inter-correlations among the work value characteristics of ideal job. All coefficients are pairwise present. See Tables 5.1.2 and 5.1.3 for the sample sizes for individual items and the employment characteristics of respondents. See Table 5.1.1 for Cluster contents.

In contrast, the correlations between values and returns reflecting the burdens of the job ("sinecure") are quite similar.

Five indicators were thought to tap the "power and autonomy" rewards accruing to job incumbency (Table 5.1.7). The fifth, ALONE, is weakly related to the other items in the value structure but moderately so in the returns structure. Average intercorrelations among values are again lower (.31; .42 excluding ALONE) than are those among the rewards (.43; .54 excluding ALONE).

Before examining the factor structures which support our a priori distinctions among the rewards dimensions of work, brief comment should be made regarding the consistently lower average intercorrelations among value indicators relative to those among returns indicators. Three competing hypotheses may bear upon this pattern. The first is that the value structures of young employed adults are only moderately crystallized, that is, internally diverse. The second is that values in fact are highly differentiated, but that we employ too few dimensions, resulting in mixtures of high and moderate correlations among items when compressed into five (or six) clusters. That is, our questions may be too crude to reveal the actual consistency of values. The final hypothesis is that values actually vary less than do the returns accruing to work among youth, and that the lower correlations reflect this lack of variance: most people share similar work values and restricted variance leads to lower correlations.

We suggest that a combination of the first and third possibilities is the most likely explanation. When factoring these two sets of items,

Table 5.1.7 Item-Intercorrelations for the Indicators Tapping "Power and Autonomy" Returns to Work -- Total AEQ Sample[a]

IDEAL JOB REAL JOB

	RESPC	CHARG	SUPRV	DECIS	ALONE
RESPC	1.00	.483	.510	.418	.222
CHARG	.375	1.00	.686	.623	.280
SUPRV	.389	.626	1.00	.482	.230
DECIS	.211	.525	.345	1.00	.355
ALONE	.045	.181	.120	.235	1.00

---

[a] Coefficients above the diagonal refer to inter-correlations among the work returns of actual job, those below the diagonal refer to inter-correlations among the work values of ideal job. All coefficients are pairwise present. See Tables 5.1.2 and 5.1.3 for the sample sizes for individual items and the employment characteristics of respondents.

we found that five factors accounted for almost 62 percent of the total variance in values, while six factors accounted for approximately 58 percent of the variance in experienced rewards. Thus, a small number of common value dimensions do account for a large portion of the *existing* variance in responses.

The factor structure of work values (see Table 5.1.8) reproduces our *a priori* distinctions remarkably well. Factor I is clearly an "extrinsic" reward dimension and all eight items hypothesized to index this dimension load above .30 on the cluster. Factor II reflects "social service" and Factor IV isolates our "sinecure" dimension.[3] The final three factors are not as distinct as would be desirable theoretically; however, the items with the largest loadings do define these factors as reflecting "power and autonomy" (Factor III), "associational returns" (Factor V), and "engagement" (Factor VI). The presence of the two indicators WORLD and PROMO in the "power and autonomy" dimension are understandable when one views "moving up in the world" and "chances for promotion" as implying increased authority rather than only increased security or financial rewards. Likewise, it is more difficult to distinguish living environment and work appeal from the interpersonal gratifications realized at work (Factor V) when empirical rather than theoretical bases are employed to categorize work values. The factors themselves (see Table 5.1.10, lower diagonal) are intercorrelated at low to moderate levels (average coefficient is .19).

The factor structure for the work rewards experiences in actual job situations (see Table 5.1.9) is both more and less consistent with our

Table 5.1.8 Factor Structure of Work Values of Ideal Job -- Total AEQ Sample[a]

FACTOR I (24.5)	
RETIR	.802
INSUR	.686
VACAT	.580
PLACE	.362
PROMO	.351
WORLD	.338
GDPAY	.331
STEDY	.312

FACTOR II (9.9)	
SOCIE	.890
HELPO	.734

FACTOR III (7.4)	
SUPRV	-.732
CHARG	-.720
WORLD	-.590
PROMO	-.525
RESPC	-.495
DECIS	-.445
CHLNG	-.362

FACTOR IV (6.5)	
HOURS	.589
EZWRK	.575

FACTOR V (5.2)	
PEOPL	-.667
CONDT	-.581
GDBOS	-.558
PLACE	-.371
INTER	-.371
GDPAY	-.359

FACTOR VI (4.2)	
DIFFR	-.448
VARIE	-.422
DECIS	-.354

---

[a] The sample size on each item varied from 1159 to 1182, all correlations were pairwise present. An oblique varimax rotation factor analysis was performed; six factors were extracted by the default option of having an eigenvalue greater than or equal to 1.00 and accounted for 57.8% of the total inter-item variation. Numbers in parentheses in the above table document the percent of total variance accounted for by each factor. The reader is referred to Table 5.1.2 for item abbreviations.

Table 5.1.9 Factor Structure of Work Return Characteristics of Real Job -- Total AEQ Sample[a]

FACTOR I (35.7)	
SOCIE	.868
HELPO	.799
HOWGD	.358
INTER	.323
DIFFR	.319

FACTOR II (8.4)	
RETIR	.910
INSUR	.787
VACAT	.782
PROMO	.588
WORLD	.503
PLACE	.484
GDPAY	.462

FACTOR III (6.8)	
EZWRK	.663
HOURS	.606

FACTOR IV (6.3)	
PEOPL	.693
GDBOS	.676
CONDT	.661
INTER	.417
VARIE	.332
PLACE	.304

FACTOR V (4.4)	
CHARG	-.882
SUPRV	-.724
DECIS	-.705
RESPC	-.470
ALONE	-.326

---

[a] The sample size on each item varied from 1159 to 1182, all correlations were pairwise present. An oblique varimax rotation factor analysis was performed; five factors were extracted by the default option of having the eigenvalue greater than or equal to 1.00 and accounted for 61.6% of the total inter-item variation. Numbers in parentheses in the above table document the percent of total variance accounted for by each factor. The reader is referred to Table 5.1.3 for item abbreviations.

a priori distinctions than is that for values. Again, the "extrinsic" returns dimension (Factor II) reproduces our speculations almost perfectly (STEDY loaded approximately .27). Factor V also reflects quite well the "power and autonomy" dimension of work returns postulated in Table 5.1.1, and Factor III captures the work "sinecure" dimension. Factors I and IV (correlated at .42, see Table 5.1.10, upper diagonal), however, are less in line with expectations. The "social service" dimension, isolated exactly among work values, is here confounded with the "engagement" dimension, as is the "association" cluster. Indeed, no distinct "engagement" cluster emerges when actual rather than ideal jobs are being characterized. This confounding of dimensions is exactly as anticipated in our earlier discussion of within- and between-cluster correlations under the *a priori* classification. Still, however, the markedly smaller loadings of the "engagement" indicators in both of these factors relative to those of the defining items suggest that other returns from the routines of work are distinguishable from those involving the "helping" potential of those routines.

The average interfactor correlation among the work returns dimensions (.28) is noticeably larger than that among the values factors (.19). This, however, obscures some important differences (see Table 5.1.10). Whereas the values factors were all moderately correlated, the work returns factors range from being essentially unrelated (coefficients around .10) to being appreciably related (coefficients around .40). Despite the variety in the actual routines of work experienced by these youth, however, when the sinecure cluster is excluded all of the other returns dimensions do tend

Table 5.1.10 Inter-Factor Correlations for Dimensions of Work Returns to Real and Ideal Jobs -- Total AEQ Sample[a]

IDEAL WORK DIMENSIONS	REAL WORK DIMENSIONS				
	FACTOR I	FACTOR II	FACTOR III	FACTOR IV	FACTOR V
FACTOR I		.414	-.138	.417	-.513
FACTOR II	.088		-.008	.423	-.370
FACTOR III	-.269	-.213		.010	-.059
FACTOR IV	.169	-.178	-.104		-.406
FACTOR V	-.418	-.287	.340	-.072	
FACTOR VI	.083	-.267	.170	-.126	.127

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[a] The reader is referred to Tables 5.1.8 and 5.1.9 for the item contents of these real and ideal factors, and to Tables 5.1.2 and 5.1.3 for the abbreviations for the items.

to covary -- persons who experience substantial returns of one sort also appear to reap others, and, unfortunately, those who enjoy few returns on any dimension tend also to be deprived on others.

5.1.C. Scale Properties of Real and Ideal Work Reward Indexes

Despite the partial confounding of dimensions B, C, and E -- "social service," "engagement," and "association" -- we conclude that the factor analyses presented in Tables 5.1.8 and 5.1.9 offer strong support for the _a priori_ distinctions hypothesized in Table 5.1.1. Therefore, we formed six scales of work rewards -- both ideal and real -- according to the dimensions outlined in Table 5.1.1. For each youth, the responses (1 through 5) to each item in a scale were summed and divided by the number of items for which data were available. Once again, at least 60 percent of the items in each scale had to be available for a composite to be computed. Thus, the number of items contributing to the individual scales were set as follows: "power and autonomy," and "engagement," 3 or more items; "extrinsic," 5 or more items; "sinecure," "associations," and "social service," at least 2 items.

Table 5.1.11 presents the patterns of non-response across the items in each scale. Approximately 305 persons omitted the entire values inventory (those persons who never planned to work) and 1047 persons skipped the entire work returns inventory (those persons who were not employed at the time of the survey -- see the asterisk in Table 5.1.11). Therefore, 1931 persons could have information on work values and 1189 could have

Table 5.1.11 Percentage and Number of Young Adults Having Data on a Given Number of Items Within the Work Values and Work Returns Scales

	EARNS-V	SERVE-V	ENGAG-V	ASSOC-V	POWER-V	SINEC-V	EARNS-R	SERVE-R	ENGAG-R	ASSOC-R	POWER-R	SINEC-R[a]
0 Items	14.0%	14.0%	13.7%	13.6%	13.7%	13.7%	47.5%	47.5%	47.0%	47.2%	46.8%	47.3%
N	312	312	307	305(*)	306	307	1062	1063	1052	1055	1047(*)	1057
1 Item	.0%	.9%	.3%	.4%	.0%	1.5%	.0%	1.0%	.4%	.4%	.5%	1.1%
N	0	20	6	9	0	33	0	22	10	8	11	24
2 Items	.0%	85.2%	.1%	.9%	.3%	84.8%	.0%	51.5%	.2%	1.2%	.3%	51.7%
N	1	1904	2	21	7	1896	0	1151	4	27	7	1155
3 Items	.0%		.0%	85.0%	.3%		.0%		.4%	51.3%	.3%	
N	0		1	1901	6		1		8	1146	7	
4 Items	.0%		1.1%		1.3%		.4%		.7%		.8%	
N	0		25		28		10		16		17	
5 Items	.0%		84.7%		84.5%		.0%		51.3%		51.3%	
N	0		1895		1889		0		1146		1147	
6 Items	.3%						.2%					
N	7						4					
7 Items	1.7%						.8%					
N	39						18					
8 Items	83.9%						51.0%					
N	1877						1141					
N of 2236-(*)	1931	1931	1931	1931	1931	1931	1189	1189	1189	1189	1189	1189
N Valid Scale	1923	1904	1920	1901	1917	1896	1163	1151	1162	1146	1164	1155
% Valid Scale	99.6%	98.6%	99.4%	98.4%	99.3%	98.2%	97.8%	96.8%	97.7%	96.4%	97.9%	97.1%

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[a] See text for abbreviations. Scales POWER and ENGAG required 3 or more total items; scale EARNS required 5 or more total items; scales SINEC, ASSOC, and SERVE required at least 2 total items. "-V" indicates a work values scale and "-R" a work return scale.

information on work rewards. Based upon these figures, at least 96 percent of all eligible respondents answered a sufficient number of items in each scale to receive a scale score (see the last line in Table 5.1.11).

Males appear to value power and autonomy rewards more than do females (see Table 5.1.12), while females tend to attach more importance than do males to the "social service" rewards of employment. Smaller sex differences are noted for the other values dimensions. Employed women experience substantially more "associational" rewards from their jobs and slightly greater feelings of "social service" from and "engagement" in their work tasks than do males. And, although men value "power" more than do women, they experience only a small advantage in this respect. As noted before, with but one exception the returns to work among young adults do not measure up to their employment ideals. Even the exception supports this conclusion -- their work is easier and takes less of their time than they would prefer.

The average intercorrelation among work returns for employed women (see Table 5.1.13, lower right hand segment), is .432, while that for men is .568.[4] A similar pattern exists among the values scales, where the average association among males (.369) is slightly larger than that among females (.315). Although the jobs of men, as well as men's value structures, appear to be more consistent across dimensions, the correspondence between values and job returns is closer on every dimension for women than for men (see the parallel underlined coefficients in Table 5.1.13).

Inspection of the correlations among valued and experienced rewards for males, females, and the total sample (see Table 5.1.14) suggests the

Table 5.1.12 Means and Standard Deviations of the Work Values and Work Returns Scales[a] for the Total AEQ Sample and Sex Subgroups

	MALES		FEMALES		TOTAL	
Mean EARNS-V	4.075		3.882		3.971	
S.D. (N)	.710	(886)	.682	(1037)	.702	(1923)
Mean SERVE-V	3.834		4.091		3.973	
S.D. (N)	.905	(876)	.884	(1028)	.903	(1904)
Mean ENGAG-V	4.055		4.109		4.084	
S.D. (N)	.603	(885)	.571	(1036)	.586	(1921)
Mean ASSOC-V	4.154		4.334		4.251	
S.D. (N)	.685	(884)	.595	(1038)	.644	(1922)
Mean POWER-V	3.413		3.059		3.222	
S.D. (N)	.697	(885)	.716	(1038)	.729	(1923)
Mean SINEC-V	2.415		2.188		2.292	
S.D. (N)	.865	(874)	.781	(1022)	.828	(1896)
Mean Earns-R	3.485		3.460		3.471	
S.D. (N)	1.110	(514)	.977	(649)	1.037	(1163)
Mean SERVE-R	3.184		3.412		3.312	
S.D. (N)	1.216	(507)	1.263	(644)	1.247	(1151)
Mean ENGAG-R	3.438		3.656		3.559	
S.D. (N)	1.054	(518)	.963	(652)	1.010	(1170)
Mean ASSOC-R	3.724		4.139		3.955	
S.D. (N)	.987	(520)	.826	(653)	.924	(1173)
Mean POWER-R	2.948		2.803		2.867	
S.D. (N)	.988	(519)	.905	(652)	.945	(1171)
Mean SINEC-R	2.440		2.366		2.399	
S.D. (N)	1.022	(509)	.967	(646)	.992	(1155)

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[a] See text for variable abbreviations; "-V" indicates a work values scale; "-R" indicates a work returns scale.

Table 5.1.13 Intercorrelations Among the Work Values and Work Returns Scales for Males and Females -- AEQ Total Sample[a]

	EARNS-V	SERVE-V	ENGAG-V	ASSOC-V	POWER-V	SINEC-V	EARNS-R	SERVE-R	ENGAG-R	ASSOC-R	POWER-R	SINEC-R
EARNS-V	-----	.143	.416	.540	.352	.351	.503	.225	.379	.351	.251	.133
SERVE-V	.158	-----	.476	.248	.248	-.034	.048	.400	.188	.152	.167	-.028
ENGAG-V	.369	.411	-----	.489	.476	.095	.173	.244	.348	.212	.252	.061
ASSOC-V	.449	.131	.320	-----	.299	.270	.238	.124	.217	.324	.122	.079
POWER-V	.305	.221	.436	.192	-----	.211	.170	.170	.259	.144	.471	.145
SINEC-V	.202	-.013	.052	.172	.233	-----	.148	.043	.084	.084	.137	.501
EARNS-R	.559	.035	.210	.231	.124	-.010	-----	.486	.691	.573	.545	.209
SERVE-R	.224	.490	.192	.088	.140	-.020	.356	-----	.651	.371	.558	.056
ENGAG-R	.270	.162	.377	.176	.181	-.091	.560	.575	-----	.617	.691	.076
ASSOC-R	.258	.116	.223	.464	.081	-.040	.417	.305	.498	-----	.497	.210
POWER-R	.247	.157	.248	.115	.583	.108	.374	.395	.527	.317	-----	.235
SINEC-R	.102	.049	.042	.052	.138	.552	-.087	-.057	-.160	.031	.074	-----

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[a] See text for variable abbreviations. Correlations above the diagonal are for males, with pair wise present correlations based upon case sizes between 496 and 885. Correlations below the diagonal are for females, with pair wise present correlations based upon case sizes between 631 and 1037.

Table 5.1.14 Intercorrelations Among the Work Values and Work Returns Scales for the Total AEO Sample[a]

	EARNS-V	SERVE-V	ENGAG-V	ASSOC-V	POWER-V	SINEC-V	EARNS-R	SERVE-R	ENGAG-R	ASSOC-R	POWER-R
EARNS-V	-----										
SERVE-V	.130	-----									
ENGAG-V	.381	.444	-----								
ASSOC-V	.466	.205	.408	-----							
POWER-V	.347	.183	.428	.200	-----						
SINEC-V	.290	-.042	.067	.199	.247	-----					
EARNS-R	.527	.040	.191	.230	.143	.071	-----				
SERVE-R	.208	.457	.218	.116	.128	-.006	.412	-----			
ENGAG-R	.300	.183	.366	.210	.182	-.023	.620	.612	-----		
ASSOC-R	.260	.151	.222	.413	.051	-.016	.482	.345	.564	-----	
POWER-R	.256	.153	.245	.104	.532	.133	.458	.458	.593	.380	-----
SINEC-R	.120	.011	.050	.058	.145	.524	.058	-.010	-.052	.108	.153

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[a] See text for variable abbreviations. Correlations are pairwise present; case bases for coefficients range between 1127 and 1921.

presence of scattered sex effects. These will be explored in later analyses.

Wright and Hamilton (1978) have reported data on selected work values of economically active males aged 20 to 29 years drawn from a national probability sample of employed persons (University of Michigan's 1972-73 Quality of Employment Survey). These data offer some sense of how typical are the work values of those in our sample (although the age range in our sample is more restricted and there are differences in item format and content across the two studies). The QES data, given in Table 5.1.15, are taken from Table 2 of their article (Wright and Hamilton, 1978:1148-1149). Work values are based upon both white and blue collar workers. Only items for which there are approximate parallels across the two instruments are reported from their data.

The percentages of young males who say that each of these job characteristics is "very important" to them in an ideal job are strikingly similar across the Michigan and ETS samples. The two most discrepant comparisons involve DECIS-V and PROMO-V, with percentage differences of 27 and 11, respectively. All others are practically interchangeable. Even the two discrepancies are not entirely unexpected. First, the ETS's DECIS-V item implies more freedom and autonomy -- making one's own decisions -- than does the Michigan item. Second, our males are approximately 21 to 23 years of age, whereas the Michigan sample includes persons up to six years older. As Wright and Hamilton themselves note, the importance attached to promotion chances and autonomy increases as individuals establish homes and families and assume responsibility for others. Differences along these lines are likely quite substantial during the twenties,

Table 5.1.15 Percent Rating Selected Job Returns as Being Ideally "Very Important" in the Michigan QOE and AEQ Data Sets: Economically Active Males[a]

ITEM CONTENT[b] Michigan Item	AEQ Item	Michigan (N=338)* Males 20-29 Years.	AEQ Males (N)*
Work Interesting (40)	INTER-V	76.6	72.5 (302)
Problem hard enough (46)	CHLNG-V	40.2	40.4 (302)
Have freedom (43)	DECIS-V	53.6	27.1 (303)
Good promotion (34)	PROMO-V	71.6	60.4 (303)
Good pay (42)	GDPAY-V	62.1	61.7 (303)
Supervisor helpful (63)	GDBOS-V	45.0	42.2 (303)
Supervisor friendly (62)	GDBOS-V	42.9	42.2 (303)
Co-workers helpful (64)	PEOPL-V	45.0	47.4 (304)
Co-workers friendly (66)	PEOPL-V	48.8	47.4 (304)

---

[a] The Michigan data are extracted from Wright and Hamilton (1978: 1148-1149, Table 2) by combining blue collar and white collar workers. The AEQ data are based upon males employed at least 30 hours a week.

[b] Numbers in parentheses are the item numbers from the Michigan instrument, see Wright and Hamilton (1978). Abbreviations for the AEQ items are explained in the text and Table 5.1.2, above.

*The Michigan sample size reflects the maximum case base of males aged 20-29 years, 121 white collar and 217 blue collar workers. Specific item bases differed due to individual missing data, but these case bases were not reported in Wright and Hamilton (1978). The individual AEQ item bases are reported in parentheses.

and hence could well account for the pattern observed here. Therefore, the data in Table 5.1.15 suggest that individuals in the AEQ sample are comparable in their value structures to a representative sample of employed young adults and that the results to be presented in the following chapters can, with appropriate caution, be generalized to such a population.

5.2 WORK ROUTINES OF YOUNG ADULTS: CONFIGURATIONS OF OCCUPATIONAL TYPES

Young people who were employed at least 20 hours a week were asked to respond to a section of the AEQ follow-up questionnaire which dealt with the occupational routines involved in their work. Two types of information were collected. First, respondents were asked to record their job titles. Second, they were presented with a list of activities and asked to indicate how frequently each was engaged in at work. Together, this information was intended to examine job content as it relates to occupational title. Unfortunately, to our knowledge the job titles themselves were never coded; therefore, only the information ascertained on job routines is available for the present analysis.

Specifically, employed young adults were asked to respond to a list of 60 work activities, prefaced by the following instructions:

> Below is a list of things people do on different kinds of jobs. Circle the number after each item that shows about how many times you have done that thing on your job in the past two weeks. Even if it's not formally part of your job, like talking with other people, if you did it while at work it should be counted. If you have been sick, on vacation, think of your last two weeks on the job. (emphases in the original)

The response options available for each item were: 1= "Not at all"; 2= "Once or twice"; 3= "Several times"; 4= "Many times."

Table 5.2.1 lists these 60 activities or routines in rank order by mean response. Also included in the table are the item standard deviations, their rank orderings, and the number of respondents for the items (the last two columns of Table 5.2.1 summarize information to be discussed below). The roster of activities included ten items which either were not necessarily job related (items 23, 36, 64, 57, 26, 38, 32, and 49) or which concerned work location rather than work content (items 54 and 55). Of these items, 7 were among the ten most frequently encountered routines. These results are consistent with common sense expectations concerning interpersonal relations on the job and the nature of the working day -- workers often are sedentary (rank 2), talk about their jobs while at work (ranks 3 and 10), talk on the telephone (rank 6), loaf while at work (rank 7), and so forth. When these activities are excluded from consideration, it seems that our young adults are most frequently engaged in clerical type pursuits involving work with numbers and office machinery. We clustered these activities into six occupational classifications corresponding to the Holland RIASEC scheme. We next present our bases for selecting items for each scale and then the resulting scale properties (means, standard deviations, sex differences, etc.).

5.2.A. Scale Construction for Continuous Typologies

In a preliminary attempt to group work routines into the six occupational

Table 5.2.1 Item Means, Standard Deviations, Rank Order of Means and Standard Deviations, Data-People-Things Complexity Score,[a] and Holland RIASEC Score for Work Activity Items -- Total AEQ Sample

WORK ACTIVITY AND VARIABLE ABBREVIATION		Item Mean	RANK Mean	Item S.D.	RANK S.D.	Item N	D/P/[illegible] Comp[illegible]	RIASEC Code
Worked with numbers, arithmetic, symbols	WORK13	3.2863	1	1.0531	32	1184	D-L	C
Sat or stood in one place for an hour or more at a time	WORK23	2.9898	2	1.2033	12	1175	-	-
Talked for 5 minutes or more with another person about my job	WORK36	2.9560	3	.9836	43	1181	-	-
Spent most of my working day in one room	WORK54	2.9399	4	1.2552	8	1182	-	-
Washed up	WORK64	2.9283	5	1.2160	9	1171	-	-
Talked on the telephone	WORK57	2.7917	6	1.1806	15	1181	-	-
Spent 5 minutes or more with another person just loafing	WORK26	2.7127	7	1.0196	39	1180	-	-
Corrected a mistake someone else made	WORK65	2.7046	8	1.0001	42	1178	-	-
Looked up part numbers, stock numbers, or other numbers in a table or list	WORK16	2.6568	9	1.3049	4	1183	D-L	C
Talked about the things wrong with my job	WORK38	2.5359	10	1.0121	41	1185	-	-
Read several pages or more of material connected with the job	WORK28	2.4817	11	1.1599	19	1175	-	I
Operated a small office machine (typewriter, desk calculator, mimeograph, etc.)	WORK43	2.4442	12	1.3448	2	1182	T-H	C
Waited on or gave information to a customer	WORK33	2.3939	13	1.3588	1	1178	P-L	E
Checked, tallied, or posted numbers	WORK46	2.3844	14	1.3004	5	1181	D-L	C
Supervised the work of another person	WORK11	2.2851	15	1.1408	24	1182	P-H	E
Lifted something heavy	WORK59	2.1968	16	1.1764	16	1179	T-L	*
Handled money	WORK63	2.1641	17	1.3219	3	1176	-	C
Ordered supplies or materials	WORK66	2.1250	18	1.1751	17	1176	D-L	-
Gave lessons or instructions to someone	WORK41	2.1150	19	1.1326	25	1183	P-H	S
Looked up technical information in a book	WORK30	2.1132	20	1.2097	11	1175	D-L	I
Gave technical or professional advice or information to someone	WORK53	2.0939	21	1.1444	23	1182	P-H	S
Changed what I was doing so it wouldn't get boring	WORK32	2.0440	22	1.0184	40	1181	-	-

Table 5.2.1(continued)

WORK ACTIVITY AND VARIABLE ABBREVIATION		Item Mean	RANK Mean	Item S.D.	RANK S.D.	Item N	D/P/T Complex	RIASEC Code
Balanced figures	WORK69	2.0366	23	1.2721	6	1176	D-L	C
Carried merchandise, equipment, or material for another person	WORK45	2.0034	24	1.1495	22	1180	T-L	*
Used a hand tool (wrench, screw driver, soldering iron, etc.)	WORK47	1.9237	25	1.2584	7	1180	T-L	R
Sorted or inspected products	WORK52	1.9109	26	1.2010	13	1178	T-L	-
Watched or guarded something	WORK61	1.7995	27	1.1084	27	1177	-	-
Helped make another person comfortable physically	WORK27	1.7626	28	1.0734	31	1175	P-L	S
Collected payment from a customer	WORK39	1.7475	29	1.2126	10	1184	P-L	-
Talked to a large group of people	WORK29	1.7355	30.5	1.0465	34	1176	P-L	E
Drove a vehicle (truck, bus, bulldozer, taxi, personal car if used on the job, etc.)	WORK15	1.7355	30.5	1.1727	18	1187	T-H	*
Stood behind a counter	WORK40	1.7146	32	1.1942	14	1181	-	-
Took a stock inventory	WORK17	1.6855	33	1.0508	33	1183	D-L	-
Operated a heavy machine (lathe, drill press, crane, lithograph, data processing equipment, etc.)	WORK14	1.6850	34	1.1526	21	1184	T-H	R
Carried out routine maintenance on machinery	WORK20	1.6641	35	1.0793	29	1182	T-L	R
Wrote a report or some kind of original material (advertising copy, written specifications, etc.)	WORK25	1.6537	36	1.0333	35	1178	D-H	-
Sold something	WORK31	1.6505	37	1.1579	20	1176	P-L	E
Recorded gauge, meter, or indicator readings	WORK50	1.6288	38	1.1088	26	1180	D-L	-
Talked to a sales prospect	WORK18	1.6005	39	1.0892	28	1174	P-L	E
Read a technical or schematic drawing or blueprint	WORK60	1.5884	40	1.0754	30	1176	D-H	I
Washed dishes, laboratory equipment, or other equipment	WORK48	1.5703	41	1.0244	37	1180	T-L	-
Spent most of my working day outside	WORK55	1.5493	42	1.0236	38	1176	-	*
Attended a training class	WORK35	1.5413	43	.9801	44	1175	-	-
Estimated costs or amounts of material	WORK66	1.5332	44	.9679	46	1176	D-H	-
Operated a testing instrument	WORK62	1.5247	45	1.0310	36	1174	T-H	-
Talked about union affairs	WORK49	1.5008	46	.8640	54	1186	P-L	-
Delivered merchandise	WORK70	1.4953	47	.9497	48	1167	T-L	-

Table 5.2.1 (continued)

WORK ACTIVITY AND VARIABLE ABBREVIATION		Item Mean	RANK Mean	Item S.D.	RANK S.D.	Item N	D/P/T Complex	RIASEC Code
Arranged a layout	WORK58	1.4569	48	.8817	52	1173	D-H	A
Prepared or served food	WORK19	1.4425	49	.9728	45	1182	-	-
Repaired an automobile or other machinery	WORK34	1.4232	50	.9026	51	1179	T-H	R
Performed a personal service for a customer (set or cut hair, cleaned teeth, gave a massage, etc.)	WORK24	1.4177	51	.9581	47	1178	P-L	S
Operated a power tool (skil saw, jack hammer, etc.)	WORK22	1.4099	52	.9041	50	1176	T-H	R
Wore a hard hat or protective goggles	WORK56	1.3966	53	.9272	49	1175	-	*
Used a microphone or public address system	WORK67	1.3611	54	.8746	53	1177	-	-
Repaired a piece of electrical or electronic equipment	WORK51	1.3548	55	.8318	55	1181	T-H	R
Carried a gun	WORK21	1.2198	56	.7172	56	1174	T-L	-
Worked at a drafting table (whether actually drafting or doing some other kind of work)	WORK44	1.2059	57	.6531	57	1180	-	-
Conducted a chemical or laboratory test	WORK12	1.1874	58	.6447	58	1179	D-H	I
Played a musical instrument	WORK37	1.1647	59	.5807	59	1184	T-H	A
Worked as a paid entertainer	WORK42	1.0583	60	.3803	60	1183	P-H	A

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[a] Data-People-Things items were classified as either low or high; cut-off points between low and high activities were determined such that some range of complexity would be evidenced within the sorts of job in which young adults would be found. The specified ranges were: D-H, 0-3; D-L, 4-6; P-H, 0-4; P-L, 5-8; T-H, 0-3; T-L, 4-7.

*See footnote 1, above, and Appendix E. RIASEC codes of * indicate items which could have been included on the Realistic dimension; see Table 5.2.2 for the details of code assignment.

types identified in Holland's theory -- Realistic (R), Investigative (I), Artistic (A), Social (S), Enterprising (E), and Conventional (C) -- four judges were asked to rate each of the 60 AEQ items. These were written on index cards and judges were asked to sort the items into the six RIASEC types, with a seventh category being reserved for items judged worthless (W) for distinguishing among the theoretical categories. No attempt was made to place all items into RIASEC groups. Rather, judges were instructed to concentrate upon locating clearly typical anchor routines for each cluster (see Appendix B for a description of the six types).

Table 5.2.2 presents the 33 items which were identified as useful for distinguishing among occupational types, together with the ratings given to the item by each of the four judges and the final scale designation. The final code was determined in the following manner: (1) if three or four judges agreed exactly on the item's classification, it was given that code; (2) if two judges agreed exactly that the item should receive the same RIASEC code and two other judges rated it "W" it was given the "non-W" agreed-upon code; (3) more extensive disagreements among judges resulted in the item being classified "W" and omitted from factor analyses. It turned out that markedly more items were judged to be characteristic of R-type occupations than were chosen as anchor activities for the other five types. Therefore, Realistic items on which there existed any disagreement across judges (see asterisks Table 5.2.2) were distinguished from unanimous choices (see below for further details).

These 33 items were subjected to an orthogonal, principal components factor analysis with varimax rotation. The number of factors extracted

Table 5.2.2 Judges' Ratings of Work Activities According to Their Potential to Distinguish Among Holland RIASEC Occupational Types[a]

ITEM CONTENT		JUDGE 1	JUDGE 2	JUDGE 3	JUDGE 4	RIASEC[b,c] Code
Used a hand tool (wrench, screw driver, soldering iron, ...)	WORK47	R	R	R	R	R
Operated a heavy machine (lathe, drill press, crane, ...)	WORK14	R	R	R	R	R
Carried out routine maintenance on machinery	WORK20	R	R	R	R	R
Repaired an automobile or other machinery	WORK34	R	R	R	R	R
Operated a power tool (skil saw, jack hammer, etc.)	WORK22	R	R	R	R	R
Repaired a piece of electrical or electronic equipment	WORK51	R	R	R	R	R
Lifted something heavy	WORK59	R	R	R	W	*
Drove a vehicle (truck, bus, bulldozer, taxi, ...)	WORK15	R	W	R	R	*
Spent most of my working day outside	WORK55	R	W	R	R	*
Carried merchandise, equipment, ... for another person	WORK45	R	W	R	W	*
Wore a hard hat or protective goggles	WORK56	R	W	R	W	*
Conducted a chemical or laboratory test	WORK12	I	I	I	I	I
Read several pages ... of material connected with the job	WORK28	W	I	W	I	I
Looked up technical information in a book	WORK30	W	I	I	W	I
Read a technical or schematic drawing or blueprint	WORK60	W	I	I	W	I
Played a musical instrument	WORK37	A	A	A	A	A
Worked as a paid entertainer	WORK42	A	A	A	A	A
Arranged a layout	WORK58	W	A	A	W	A
Gave lessons or instructions to someone	WORK41	S	S	S	S	S
Helped make another person comfortable physically	WORK27	S	S	S	S	S
Performed a personal service for a customer (set hair, ...)	WORK24	S	S	S	S	S
Gave technical or professional advice or information ...	WORK53	W	W	S	S	S
Sold something	WORK31	E	E	E	E	E
Talked to a sales prospect	WORK18	E	E	E	E	E
Waited on or gave information to a customer	WORK33	E	E	E	W	E
Supervised the work of another person	WORK11	W	E	E	W	E
Talked to a large group of people	WORK29	W	E	E	W	E

Table 5.2.2 (continued)

ITEM CONTENT		JUDGE 1	JUDGE 2	JUDGE 3	JUDGE 4	RIASEC Code
Operated a small office machine (typewriter, ..., etc.)	WORK43	C	C	C	C	C
Checked, tallied, or posted numbers	WORK46	C	C	C	C	C
Balanced figures	WORK69	C	C	C	C	C
Worked with numbers, arithmetic, or symbols	WORK13	W	C	C	W	C
Looked up part ..., stock ..., or other numbers ...	WORK16	W	W	C	C	C
Handled money	WORK63	W	C	C	W	C

---

[a] R=Realistic; I=Investigative; A=Artistic; S=Social; E=Enterprising; C=Conventional; W=Worthless for distinguishing.

[b] Each of four judges rated the items above (as well as the other items in the work activities list which are not listed above, see Table 1). Each item was written on an index card, and the judges sorted them into piles labeled "R," "I," "A," "S," "E," "C," and "W." The final rating for the item was obtained in the following manner: (1) if all four judges agreed exactly on the item's classification, it was given that classification; (2) if three of the four judges agreed exactly on the item's classification, it was given that classification; (3) if two judges agreed exactly that the item should get the same RIASEC code and two other judges rated it "W" it was given the "non-W" agreed upon classification; (4) other circumstances resulted in the item's classification being "W" and the item was omitted from further factor analyses. Items are grouped above by final assignment, and in descending order of certainty within each group. Items which were given a final assignment of "W" are not included in the table. It should be noted that five items are designated by an *; these items, according to the criteria just detailed, could have been assigned an "R" code. However, in order that the six scales be similar in length these items have been excluded from the scale tapping Realistic orientations.

[c] Judges were Linda S. Gottfredson, Gary D. Gottfredson, John Holland, and Martha A. Cook.

was determined by the criterion that the eigenvalue be greater than or euqal to 1.00. Pairwise present correlations were employed. The individual item sample sizes differed only slightly (from 1175 to 1187), with the maximum difference in the case bases for any particular pair of correlations being only two percent (24/1151).

The eight factors extracted (see Table 5.2.3) accounted for 58.8 percent of the total variance in the 33 items. The clusters which emerged reproduced almost perfectly the a priori ratings made by our four judges. Furthermore, ordering of the clusters corresponds almost exactly to the typicality of RIASEC work experiences among young males 20-22 years of age: 48 percent R, 12 percent E, 5 percent C, 4 percent I, 3 percent S, and negligible A (the remainder being unemployed or not in the labor force, see Gottfredson and Brown, 1978: Table 1). In light of the close agreement between the results of the factor analysis and the judges' ratings, we constructed six scales based upon (but not necessarily identical with) the clusters identified in Table 5.2.2. The specific scale-construction procedures used are described below.

Table 5.2.4 presents the within-scale item inter-correlations. Also included are the average inter-correlations for each scale and the Spearman-Brown reliability coefficient (for a scale consisting of the number of items in parentheses based upon the average inter-correlation). These two estimates of internal consistency were calculated using only those items in each scale which are preceded by an asterisk. The remaining items were excluded owing to their low associations with other scale items. In all cases, their exclusion improved internal consistency. A cross-check between

Table 5.2.3 Factor Structure of 33 Items According to Their Ability to Distinguish* Among Realistic, Investigative, Artistic, Social, Enterprising, and Conventional (RIASEC) Types of Work -- Employed AEQ Sample

FACTOR I (18.0% of Total Variance) REALISTIC

R	WORK47	.808	Used a hand tool
R	WORK22	.735	Operated a power tool
R	WORK34	.696	Repaired an automobile or other machinery
R	WORK20	.651	Carried out routine maintenance on machinery
R	WORK59	.607	Lifted something heavy
R	WORK51	.560	Repaired a piece of electrical or electronic equipment
I	WORK60	.559	Read a technical or schematic drawing or blueprint
R	WORK56	.532	Wore a hard hat or goggles
R	WORK15	.460	Drove a vehicle
R	WORK55	.444	Spent most of my working day outside
R	WORK14	.422	Operated a heavy machine
R	WORK45	.356	Carried merchandise, equipment, or material for another person

FACTOR II (12.5% of Total Variance) ENTERPRISING

E	WORK31	.890	Sold something
E	WORK18	.680	Talked to a sales prospect
E	WORK33	.635	Waited on or gave information to a customer
C	WORK63	.620	Handled money

FACTOR III (7.1% of Total Variance) CONVENTIONAL

C	WORK46	.752	Checked, tallied, or posted numbers
C	WORK69	.617	Balanced figures
C	WORK43	.576	Operated a small office machine
C	WORK13	.551	Worked with numbers, math, or symbols
C	WORK16	.405	Looked up part, stock, or other numbers in a table or list

FACTOR IV (6.3% of Total Variance) SOCIAL

S	WORK27	.689	Helped make another person comfortable physically
S	WORK24	.562	Performed a personal service for a customer
I	WORK12	.341	Conducted a chemical or laboratory test

FACTOR V (4.4% of Total Variance) INVESTIGATIVE

I	WORK30	.740	Looked up technical information in a book
I	WORK28	.520	Read several pages or more of material connected with the job
S	WORK53	.427	Gave technical or professional advice or information to someone
I	WORK60	.410	Read a technical or schematic drawing or blueprint
R	WORK51	.312	Repaired a piece of electrical or electronic equipment

Table 5.2.3 (continued)

FACTOR VI (3.7% of Total Variance) SOCIAL

S	WORK41	.732	Gave lessons or instructions to someone
E	WORK11	.649	Supervised the work of another person
S	WORK53	.401	Gave technical or professional advice or information to someone

FACTOR VII (3.5% of Total Variance) ARTISTIC

A	WORK37	.711	Played a musical instrument
A	WORK42	.650	Worked as a paid entertainer

FACTOR VIII (3.3% of Total Variance) REALISTIC

R	WORK15	.512	Drove a vehicle
R	WORK55	.458	Spent most of my working day outside

---

*An orthogonal varimax factor analysis resulted in the default extraction (at the eigenvalue less than 1.00) of eight factors which explained 58.8% of the total variance. Correlations on which the factor analysis was based were pairwise present; item N's varied between 1175 and 1187. Items listed as loading on a particular factor were chosen because they loaded greater than or equal to .300 in absolute value. R=Realistic, I=Investigative, A=Artistic, S=Social, E=Enterprising, and C=Conventional Types of Work.

Table 5.2.4 Inter-Correlations Among RIASEC Work Activity Scale Items

	REALISTIC(5)	WORK14	WORK20	WORK22	WORK34	WORK47	WORK51
	WORK14	-----					
$\bar{r}$=.543	*WORK20	.329	-----				
ρ_{xy}=.856	*WORK22	.341	.475	-----			
	*WORK34	.295	.626	.563	-----		
	*WORK47	.316	.596	.624	.628	-----	
	*WORK51	.190	.452	.461	.467	.537	-----

	INVESTIGATIVE(3)	WORK12	WORK28	WORK30	WORK60
	WORK12	-----			
$\bar{r}$=.393	*WORK28	.168	-----		
ρ_{xy}=.660	*WORK30	.245	.517	-----	
	*WORK60	.089	.239	.423	-----

	ARTISTIC(2)	WORK37	WORK42	WORK58
	*WORK37	-----		
$\bar{r}$=.473	*WORK42	.473	-----	
ρ_{xy}=.642	*WORK58	.079	.043	-----

	SOCIAL(4)	WORK24	WORK27	WORK41	WORK53
	*WORK24	-----			
$\bar{r}$=.269	*WORK27	.422	-----		
ρ_{xy}=.595	*WORK41	.077	.226	-----	
	*WORK53	.198	.216	.477	-----

	ENTERPRISING(3)	WORK11	WORK18	WORK29	WORK31	WORK33
	WORK11	-----				
$\bar{r}$=.552	*WORK18	.130	-----			
ρ_{xy}=.787	WORK29	.205	.094	-----		
	*WORK31	.117	.632	.109	-----	
	*WORK33	.120	.468	.127	.555	-----

	CONVENTIONAL(4)	WORK13	WORK16	WORK43	WORK46	WORK63	WORK69
	*WORK13	-----					
$\bar{r}$=.423	WORK16	.343	-----				
ρ_{xy}=.746	*WORK43	.324	.170	-----			
	*WORK46	.428	.326	.436	-----		
	WORK63	.195	.044	.188	.269	-----	
	*WORK69	.380	.190	.447	.523	.391	-----

$\rho_{xy} = K\bar{r}_{xy}/[1 + (K - 1)\bar{r}_{xy}]$ where K = # items.

*See text for explanation of asterisk.

the coefficients in Table 5.2.4, the item content in Table 5.2.2 and the factor structures in Table 5.2.3 will aid the reader in interpreting the patterns of correlations demonstrated. For example, in the Artistic scale, arranging a layout (WORK58) is virtually unrelated to musical performance (WORK37) or professional entertaining (WORK42). And WORK58 did not load on the Artistic factor identified in Table 5.2.3. Thus, we have excluded it from the Artistic scale and will rely on the two unambiguously Artistic activities to index this occupational type. Specifically, the following summation procedures (which produced a common possible range of from 3 to 20) were employed to construct six indices:

Realistic: The responses to the 5 starred items (see Table 5.2.4, R) in the Realistic cluster were summed. Up to two of the five items could be missing and the individual still receive a scale score. Fewer than three responses resulted in a missing data designation for the entire scale.

Investigative: Table 5.2.4 lists three starred activities designated as "I" pursuits. The Investigative scale sums the score on WORK60 and twice the scores recorded for WORK28 and WORK30. Two items needed to be doubly weighted to achieve the 3-20 scale span and the latter were chosen because they were the defining items on the Investigative factor isolated in Table 5.2.3 (loadings of .520 and .740). For an individual to receive a scale score, at most one of the two doubly-weighted items or the unit-weighted item could be missing.

Artistic: The two starred items listed in Table 5.2.4 as indexing Artistic occupations were each weighted by 2.5 and summed. Missing data on either item resulted in a missing data score on the scale.

Social: Table 5.2.4 lists four activities designated as "S" pursuits. The Social scale is the sum of the actual scores of WORK24 and WORK53 plus 1.5 times the scores recorded for WORK41 and WORK27. Two items needed to be weighted to achieve the 3-20 scale span and the latter were chosen because they were the defining items on the two Social factors isolated in Table 5.2.3 (loadings of .732 and .689). For an individual to be assigned a scale score, at most one of the weighted or both of the unweighted items could be missing.

Enterprising: Three starred items are identified in Table 5.2.4 as indexing E-type activities. The Enterprising scale sums twice the value recorded for WORK31 (the highest loading item on the Enterprising factor, .890, isolated in Table 5.2.3), plus weights of 1.5 on the other two items. Such a summation achieves a 3-20 scale span by weighting the most characteristic activity the most heavily. At most, only one item could be missing for this scale to be constructed.

Conventional: Item 46 was doubly-weighted and summed with the actual responses to the other starred "C" items listed in Table 5.2.4. Up to two of the unit weighted items could be missing or item 46 could be missing and an individual still receive a scale score.

The use of these six scales allows us to classify the activities of an individual's job along all RIASEC dimensions. Therefore, although an individual's "peak" score may be, for example, Conventional, estimates of the Realistic, Social, Enterprising, Artistic, and Investigative aspects of occupational activity can also be obtained. Scale characteristics are discussed in the following section, "Scale Properties."

5.2.B. Scale Properties of Continuous Typologies

Of the 2236 persons in the AEQ sample, 1043 were classified as being "non-working" (i.e., working less than 20 hours a week) and thus did not complete the work routines section of the questionnaire. Our base number of respondents for any given item was therefore set at 1193. Table 5.2.5 presents the number of persons who contributed from 1 to 5 responses (weighted) to each scale. Scale scores of 0-2 items resulted in a missing data score for the individual on that scale. If an individual supplied data on at least three (weighted) items, the answers to those items were summed to produce a scale score. Given the small amount of missing data (less than 2%) on any scale, we did not analyze non-response patterns.

Inter-Scale correlations for four groups (Males, Females, White Males employed at least 30 hours a week, and the Total Sample) are presented in Table 5.2.6 along with scale means and standard deviations (it should be noted that, for all scales and all subgroups, the scale scores covered the entire possible range, 3-20). Notable sex effects are evident in comparing parallel inter-scale correlations. In general, scales are more highly inter-correlated for the males. The fact that 7 of the 15 inter-correlations appear, upon inspection, to differ across the sexes suggests that the determinants of occupational type may also differ for men and women. Five of these differences involve the two most sex-typed of the RIASEC distinctions -- Realistic and Conventional.

Sex main effects (derived from a one-way analysis of variance) were evident for five of the six occupational types, although only one, that for

Table 5.2.5 Number of Responses to Scale Items; Total AEQ Sample

	Number Items Answered							
	0*	1	2	3	4	5	Adjusted Persons	% of 1193[a] With score of $\geq$ 3
WORK-R	1045	5	1	8	18	1159	(1185)	99.3%
WORK-I	1047	9	2	8	11	1159	(1178)	98.7%
WORK-A	1052		1[b]			1183	(1183)	99.2%
WORK-S	1047	2	8	9	8	1162	(1179)	98.8%
WORK-E	1044	12	1	22		1157	(1179)	98.8%
WORK-C	1045	4	3	4	18	1162	(1184)	99.2%

---

*Largely unemployed persons

[a] 1043 persons were excluded from the base of 2236 to calculate this figure.

[b] This is a score of 2.5

Table 5.2.6 Inter-Correlations Among RIASEC Work Activity Scales for Males, Females, and White Males Who were Employed at Least 30 Hours a Week.

Females (n=624-626)

Males (n=550-557)	WORK-R	WORK-I	WORK-A	WORK-S	WORK-E	WORK-C
WORK-R	----	.075*	.140*	.130*	.026*	-.040
WORK-I	.374*[b]	----	.097*	.410*	.011	.147*
WORK-A	.117*	.069	----	.109*	.041	-.068*
WORK-S	.308*[b]	.476*	.176*	----	.148*	-.035
WORK-E	.011	.021	.131*[b]	.254*[b]	----	.210*
WORK-C	-.053	.256*[b]	.094*	.335*[b]	.395*[b]	----

White Males Employed $\geq$ 30 hr/wk (n=429-432)

Total Sample (n=1175-1183)	WORK-R	WORK-I	WORK-A	WORK-S	WORK-E	WORK-C
WORK-R	----	.348*	.070	.280*	-.012	-.091*
WORK-I	.371*	----	.062	.452*	.006	.248*
WORK-A	.141*	.097*	----	.160*	.134*	.095*
WORK-S	.175*	.420*	.140*	----	.275*	.314*
WORK-E	-.061*	-.017	.077*	.195*	----	.398*
WORK-C	-.162*	.132*	.001	.128*	.314*	----

		WORK-R	WORK-I	WORK-A	WORK-S	WORK-E	WORK-C
Males	$\bar{X}$	10.08	11.96	5.89	9.22	8.53	11.31
	SD	4.56	5.08	2.92	3.51	4.91	4.63
Females	$\bar{X}$	5.64	9.65	5.47	9.33	9.85	13.54
	SD	1.48	3.94	2.02	3.82	5.02	4.84
Total	$\bar{X}$	7.73	10.73	5.67	9.28	9.23	12.49
	SD	3.99	4.65	2.49	3.68	5.01	4.87
White Males Employed $\geq$ 30 hr/wk	$\bar{X}$	10.32	12.11	5.80	8.99	8.57	11.42
	SD	4.62	5.08	2.86	3.36	5.02	4.67
ETA^2 Sex		.310*	.061*	.007*	.000	.017*	.052*
[a]ETA^2 Race		.004	.006	.003	.003	.010*	.000

---

[a] Black, White, Oriental.

*$\alpha \leq .05$.

[b] Different across the sexes, based upon simple inspection.

Realistic occupations, was marked. Race main effects were negligible. In summary, our continuous scales for occupational types are only slightly inter-correlated among females, are moderately correlated among males, and distinguish between the sexes' mean levels of occupational activity. These scales do not, however, allow us to make any judgements concerning the distribution of individuals across occupational types.

5.2.C. Scale Construction of Dichotomous Typologies -- High Score Analysis

It was desirable, for certain purposes (see Chapter 10), to be able to classify each respondent into one and only one of the six occupational groups, that one most characteristic of the individual's occupational activity. Therefore, six dichotomous variables were constructed for the six occupational types. An individual received a "1" on the type for which his counterpart continuous scale score was the largest, and "0" on the other five dichotomous classifications. A missing scale score on any of the continuous variables resulted in a missing data designation for all six of the dichotomous indicators.

There were 1174 (625 females and 550 males) persons for whom scale scores on all six continuous variables were available. Of these, all but 106 could be classified unambiguously into one and only one of the six categories of occupational type. Respondents with tie scores on one or more scales (N=106) were assigned dominant RIASEC values randomly as follows: among the 2-way ties, odd numbered respondents were allocated to the first appearing type (in order of R, I, A, S, E, C), and all even numbered respondents allocated to the second; an analogous procedure was followed to break the 3-way ties.

The exact distribution of high-point scores and allocated high-point scores is given in Table 5.2.7, separately for males and females. The distribution of these young adult males does not correspond to the percentages quoted earlier from Gottfredson and Brown (1978: 48% R; 12% E; 5% C; 4% I; 3% S; negligible A) when the categories are compared directly. First, too many of our males are employed in Conventional and Investigative occupations and too few in Realistic. All these differences are considerable. The Gottfredson and Brown (1978) estimates were obtained using information on occupational titles which allowed for much finer distinctions to be drawn between Realistic and Investigative jobs. Low level positions in these two types, the sorts of job in which our sample of recent high school graduates most likely would be employed, are difficult to distinguish. Additionally, most Investigative jobs, although characterized by activities such as those used here to define the category, are high-level jobs and would rarely if ever be held by youth. Thus, it is likely that we are here distinguishing not between Realistic and Investigative pursuits but rather between two varieties of Realistic work. Fifty-three percent of our males are classified as either R or I; the corresponding figure from Gottfredson and Brown (1978) is 52 percent. A combination of RI jobs therefore achieves a rather close approximation to the criterion distribution for young males. Coincidentally, 53 percent of the females are employed in Conventional jobs, the most stereotypically female of the six occupational types.

Table 5.2.7 Distribution of High Point and Allocated High Point Scores for RIASEC Work Activity Scales

M = 550 F = 624 T = 1174	R	I	A	S	E	C	TOT
# Males High Point	114	159	23	30	63	109	498
# Males Allocated	7	12	0	8	7	18	52
% Males High	20.7%	28.9	4.2	5.5	11.5	19.8	
% Males Allocated	1.3%	2.2	0.0	1.5	1.3	3.3	
% Total Males	22.0%	31.1%	4.2%	6.9%	12.7%	23.1%	
	53%						
# Females High Point	8	70	11	64	104	313	570
# Females Allocated	4	9	1	11	10	19	54
% Females High	1.3%	11.2	1.8	10.3	16.7	50.2	
% Females Allocated	0.6%	1.4	0.1	1.8	1.6	3.0	
% Total Females	1.9%	12.7%	1.9%	12.0%	18.3%	53.2%	
% W Males Employed at least 30 hr/wk N = 378	24.9%	34.4%	4.0%	5.6%	10.6%	20.6%	
	60%						

5.2.D. Scale Properties of Dichotomous Typologies

Inter-scale correlations calculated from the dummy variables for occupational type are given in Table 5.2.8, along with means, standard deviations, and tests for mean differences by sex and race. We will offer little comment on these data. As before, sex differences are reflected in the inter-correlations. Main effects for sex are noted for all six occupational types, although these again are small except for the two sex-specific classifications of R and C (were R and I combined the differences would be more marked). Differences by race were again negligible.

Table 5.2.8 Inter-Correlations Among High Point Work Activity Scores, and Sex Differences in Distributions of Youth Across the Six RIASEC Occupational Types.

Females (n = 624)

Males (n = 550)	R	I	A	S	E	C
R	-----	-.053	-.020	-.052	-.066*	-.149*
I	-.357*	-----	-.053	-.141*	-.180*	-.406*
A	-.111*	-.140*	-----	-.052	-.066*	-.149*
S	-.145*	-.183*	-.057	-----	-.175*	-.394*
E	-.203*	-.256*	-.080*	-.104*	-----	-.504*
C	-.291*	-.368*	-.114*	-.149*	-.209*	-----

White Males Employed $\geq$ 30 hr/wk (n = 378)

Total Sample (n = 1174)	R	I	A	S	E	C
R	-----	-.416*	-.117*	-.140*	-.198*	-.293*
I	-.186*	-----	-.147*	-.176*	-.249*	-.369*
A	-.063*	-.091*	-----	-.049	-.070	-.104*
S	-.117*	-.170*	-.057*	-----	-.083	-.124*
E	-.154*	-.224*	-.076*	-.141*	-----	-.175*
C	-.286*	-.417*	-.140*	-.262*	-.345*	-----

		R	I	A	S	E	C
Males	$\overline{X}$	.220	.311	.042	.069	.127	.231
	SD	.415	.463	.200	.254	.334	.422
Females	$\overline{X}$	.019	.127	.019	.120	.183	.532
	SD	.137	.333	.137	.325	.387	.499
White Males Employed $\geq$ 30 hr/wk	$\overline{X}$	.113	.213	.030	.096	.157	.391
	SD	.317	.410	.170	.295	.364	.488
Total Sample	$\overline{X}$	.249	.344	.040	.056	.106	.206
	SD	.433	.476	.195	.229	.308	.405
ETA^2 Sex		.100*	.050*	.004*	.008*	.006*	.095*
[a]ETA^2 Race		.002	.002	.008*	.001	.002	.002

---

[a] Black, White, Oriental.

* $\alpha \leq .05$.

FOOTNOTES

[1] A second schemata for ordering job routines -- the Data/People/Things classification used in the Dictionary of Occupational Titles (U.S.Department of Labor, 1975) -- was considered. The Data/People/Things categorization was intended to tap dimensions of occupational activity somewhat distinct from the Holland typology. Unfortunately, both sets of scales had to be derived from the same set of items and it turns out that five of the D/P/T scales map directly on to (correlations in the range of .60 to .99) five of the Holland classifications. Although this was not an inevitable consequence of our procedures, it nevertheless renders the D/P/T categorization useless, as it is practically redundant with the Holland codes. See Appendix E.

[2] These routing instructions were unfortunate. They specifically used the example of "a married woman without plans to work outside your home" to select respondents for this particular section of the questionnaire.

[3] Cluster F was included in Table 5.1.1 following the isolation of this dimension among both work values and characteristics; it was not suggested by theory as a separate value or attribute dimension.

[4] In this discussion, all correlations involving SINEC-V and SINEC-R have been omitted from the averaging procedures.

Chapter 6 -- Determinants of Adolescents' Pre-Occupational Interests and Their Consequences for School Attainments and Work Values

In Chapter 4 we developed six scales to characterize the manifest interests of adolescents in terms of Holland's RIASEC occupational typology and, in Chapter 5, six scales focusing on the rewards youth value in their work. Vocational theory suggests that if career-planning is effective, work values should be informed by youths' prior interests, as they begin to seek out occupational opportunities commensurate with their abilities and interests. Accordingly, in this chapter we examine, first, the stability of interests over the high school years; and, second, whether these interests do, in fact, affect educational outcomes in high school and work values. To anticipate our results, although interests do evidence considerable stability over the school years, they are strikingly ineffectual in influencing educational attainments and job values. The final section of this chapter speculates upon why this should be if, in fact, "person-environment fit" is as salient to youth in their career planning and job search as the vocational development literature suggests.

Analyses reported in earlier chapters suggested that pre-occupational interests, as measured here, (1) are fairly stable over the high school years, (2) evidence marked variation by sex and (3) slight variation by race (see Chapter 4). Those analyses led us to speculate that sex of respondent would be as effective a predictor of senior high school interests as would be earlier levels of those same interests, at least for several of the activity types -- namely, Realistic, Social, and Conventional pursuits.

We consider these and additional concerns. We first examine the impact of basic demographic and background characteristics (sex, race, parental status characteristics, ability) and school achievement test scores on junior high school interests, controlling for school-to-school variation (as deemed prudent by the sampling considerations outlined in Chapter 2) in interest patterns. These earlier interests, in turn, together with curriculum track, are used to predict senior high school interests. We then investigate whether these manifest interests themselves affect high school achievements -- educational plans in the junior and senior years, college application and acceptance status, and SAT verbal and quantitative test performance. If, as might be expected, certain interest patterns incline students toward academic pursuits or educationally linked career preferences, then such influences might well be appreciable. The same sample of GROUP 4 students (n=1643), selected to have complete data on all of the indicators employed, is used for all of these analyses. Where possible, comparable analyses are conducted for AEQGP2 students, again restricted to those with complete data (n=947).[1]

6.1 THE DETERMINANTS OF PRE-OCCUPATIONAL INTERESTS ACROSS TIME

Among seventh graders, the six domains of pre-occupational interests relate quite differently to race, gender, and other background information. After controlling for school-to-school variations in interest levels (a procedure that resulted in an approximate absolute 2% increase in explained variation[2]), about 37 percent of the variation in Realistic and Conventional pursuits was accounted for by our simple model, while the R^2 was approximately .16 for Artistic and Social activities, .12 for Investigative, and only .09 for Enterprising interests (see Table 6.1.1). A large component of this difference in predictability lies in the differential main effects of sex and, to a much smaller degree, race across interest types, although clearly the poorer reliabilities of the latter scales also contribute to this pattern. Males score much higher on Realistic interests, while young women are inclined disproportionately toward Conventional pursuits. Females also score somewhat higher on the Enterprising, Artistic, and Social scales, while males more often engage in Investigative activities. Black youth score higher than do white youth on all but Realistic and Investigative pursuits, displaying a profile relative to whites very similar to that of women relative to men. In most instances, however, race differences are much smaller than sex differences. An exception concerns Enterprising activities, a somewhat surprising outlier in view of the small numbers of blacks who actually go into Enterprising work (see Gottfredson, 1978a).

Parental status variables are related to all types of interests except Conventional. Contrary to the literature documenting differences in value orientations and value socialization across SES levels, we find no evidence that some kinds of interests are discouraged in higher status homes and encouraged in lower status ones, at least not these sorts of interests and not among seventh graders. Rather, high SES youth are more involved across all the activity domains considered here. In fact, to anticipate somewhat later results, this is true at later grade levels also. We suggest that these interest scales are responsive to parental educational-

Table 6.1.1 Determinants of 7th Grade Pre-Occupational Interests[a]

		INDEPENDENT VARIABLES										
OUTCOME[b]		SEX	RACE	FAED67	MOED67	FAOC67	ABIL63	ACHV63	SCHOOLS (+)	SCHOOLS (-)	R^2	ADJ R^2
REAL07	(1)	-.590*	-.030	.008	.004	.000	.004*	-.001*			.356	.353
		(-.580)	(-.018)	(.047)	(.017)	(.002)	(.084)	(-.153)				
	(2)	-.595*	.041	.010*	.004	.000	.004*	-.001*	7,6		.372	.360
		(-.585)	(.025)	(.057)	(.017)	(.005)	(.086)	(-.159)				
INVE07	(1)	-.277*	.076	.016*	.003	.001	.005	.000			.101	.097
		(-.249)	(.042)	(.085)	(.014)	(.030)	(.088)	(.061)				
	(2)	-.284*	.101	.015*	.002	.001	.004	.001	12		.117	.101
		(-.256)	(.056)	(.078)	(.009)	(.022)	(.069)	(.067)				
ARTS07	(1)	.209*	.078*	.009*	.012*	.001	.002	.001*			.141	.138
		(.068)	(.057)	(.065)	(.072)	(.041)	(.042)	(.156)				
	(2)	.207*	.095*	.010*	.012*	.001	.002	.001*		17,9,15 4,8,10	.161	.145
		(.249)	(.070)	(.068)	(.071)	(.036)	(.058)	(.143)				
SOCL07	(1)	.318*	.164*	.011*	.000	-.001	-.001	-.001			.150	.146
		(.354)	(.112)	(.073)	(.002)	(-.035)	(-.019)	(-.085)				
	(2)	.317*	.245*	.011*	.003	-.001	.000	-.001*	14	19	.173	.158
		(.354)	(.167)	(.074)	(.015)	(-.023)	(.007)	(-.103)				
ENTR07	(1)	.117*	.139*	.005	-.006	.002*	.013*	.001			.060	.056
		(.074)	(.053)	(.019)	(-.017)	(.058)	(.156)	(.072)				
	(2)	.108*	.178*	.007	-.005	.002	.015*	.000		2,3,15 8	.086	.069
		(.068)	(.069)	(.025)	(-.016)	(.043)	(.188)	(.043)				
CONV07	(1)	1.029*	.200*	-.004	-.001	-.002	-.002	.000			.374	.371
		(.605)	(.072)	(-.012)	(-.004)	(-.036)	(-.018)	(.014)				
	(2)	1.028*	.291*	-.003	-.000	-.001	-.001	.000	2		.384	.373
		(.604)	(.104)	(-.010)	(-.001)	(-.030)	(-.019)	(.019)				

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[a] Group 4, listwise N = 1643. See Table A-1.

*Significant at $\alpha \leq .05$; standardized coefficients in parentheses.

[b] REAL = Realistic; INVE = Investigative; ARTS = Artistic; SOCL = Social; ENTR = Enterprising; CONV = Conventional.

occupational characteristics not so much due to their "type" component but rather due to their "activity" component. Hobbies, social pursuits, crafts, the development of artistic talents -- all of these activities are facilitated by the kinds of resources usually associated with higher status homes -- space, money, privacy, encouragement. The more such resources are available in the home, the more activities youth can, and apparently do, undertake. Although these SES differences are not large, their patterning is quite consistent.

Ability and achievement batteries relate to interests in a complicated, though comprehensible, fashion. Ability influences, where they appear (Realistic, Enterprising), all are positive. Achievement, on the other hand, appears to deflect youth from Realistic and Social pursuits, but encourage Artistic involvements (two of these, Social and Artistic, are unaffected by ability).

Although the high association between achievement and aptitude complicates interpretation of their separate effects, if their influences can be distinguished the pattern suggested here is quite plausible. Higher ability students -- controlling on achievement -- would most likely engage in a wider range of hobbies and pursuits. Holding ability constant, however, higher achievers -- those who presumably are channeling more of their energies into academic pursuits -- would spend less time engaging in manifest interests of the sort measured here. The exception, Artistic pursuits, also fits this pattern because many of the specific activities included therein could be undertaken in connection with class activities.

In general, the effects of parental status, ability, and achievement are modest and clearly secondary to differences associated with sex and race. It seems, then, that the single major determinant of pre-occupational interests, at least of the Holland variety, is society's sex-linked normative structure which prescribes and proscribes certain activities as being appropriate for males and females. Within these broad but specific outlines, other factors, such as race or social position and ability, operate to differentiate youth's activities.

The data presented in Table 6.1.2, which pertain to ninth grade interest patterns, suggest few modifications to this conclusion. From 12 (Enterprising) to 57 percent (Realistic) of the variance in ninth grade interests is accounted for by background characteristics and earlier, seventh grade, expressions of pre-occupational activities. In fact, sex effects (compare raw coefficients from lines (1) between Tables 6.1.1 and 6.1.2) actually are greater in the ninth grade than in the seventh, at least for Realistic, Investigative, Social, and Conventional pursuits. Even after controlling for achievement and earlier interests, substantial direct effects for sex remain, suggesting that sex differentiation of interest patterns continues through adolescence. Males, again, are more likely to indicate Realistic and Investigative participation, and females Social, Conventional, and, to a lesser degree, Artistic ones.

Racial effects are not so pronounced. In the reduced form equations (see rows (1)), blacks score lower on Realistic and higher on all other interests except Investigative than do whites. These differences, though, are about the same as found in the seventh grade. Not surprisingly then, all direct racial effects wash out when earlier interest patterns are controlled. This pattern, with one notable exception to be discussed shortly, continues into the eleventh grade.

Table 6.1.2 Determinants of 9th Grade Pre-Occupational Interests[a]

INDEPENDENT VARIABLES

OUTCOME[b]	SEX	RACE	FAED67	MOED67	FAOC67	ABIL63	SCHOOLS +	SCHOOLS -	ACHV65	REAL07	INVE07	ARTS07	SOCL07	ENTR07	CONV07	R^2	ADJ R^2
REALO9 (1)	-.698* (-.670)	-.076* (-.045)	-.003 (-.017)	.002 (.009)	.001 (.033)	-.002* (-.044)										.451	.449
(2)	-.696* (-.668)	-.038 (-.022)	-.002 (-.010)	.003 (.012)	.001 (.039)	-.002* (-.041)	--	-								.460	.450
(3)	-.690* (-.662)	-.045 (-.026)	-.000 (-.003)	.003 (.014)	.001 (.041)	.004* (.073)	--	15	-.001* (-.146)							.466	.456
(4)	-.458* (-.440)	-.074* (-.044)	-.005 (-.029)	.002 (.011)	.001 (.039)	.002 (.041)	--	15	-.001* (-.006)	.357* (.349)	.065* (.069)	-.054* (-.043)	.050* (.043)	.014 (.021)	-.005 (-.008)	.565	.555
INVEO9 (1)	-.301* (-.267)	.054 (.029)	.006 (.031)	.001 (.045)	.002* (.078)	.007* (.124)										.109	.106
(2)	-.312* (-.277)	.097 (.053)	.006 (.031)	.010 (.044)	.002* (.068)	.007* (.124)	18	--								.128	.112
(3)	-.322* (-.286)	.108 (.059)	.004 (.020)	.010 (.041)	.002* (.066)	-.002 (-.042)	16	--	.002* (.212)							.140	.124
(4)	-.167* (-.148)	.065 (.035)	-.003 (-.015)	.008 (.035)	.002* (.055)	-.005* (-.089)	16	--	.001* (.194)	.087* (.078)	.432* (.426)	.024 (.017)	-.075* (-.060)	.011 (.016)	.035 (.053)	.327	.312
ARTSO9 (1)	.177* (.222)	.086* (.066)	.013* (.097)	.006 (.034)	.002* (.095)	.009* (.233)										.156	.153
(2)	.177* (.222)	.095* (.073)	.016* (.114)	.006 (.034)	.002* (.093)	.009* (.225)	21	15								.180	.166
(3)	.170* (.213)	.102* (.078)	.014* (.103)	.005 (.031)	.002* (.091)	.003 (.063)	18,21	15	.001* (.207)							.192	.177
(4)	.075* (.094)	.064 (.049)	.010* (.071)	-.001 (-.004)	.001* (.071)	.000 (.009)	13,18 21,8	--	.001* (.150)	-.004 (-.005)	.024 (.033)	.472* (.492)	-.052* (-.058)	.002 (.004)	.015 (.032)	.396	.382
SOCLO9 (1)	.575* (.572)	.109* (.067)	.003 (.016)	.002 (.007)	-.000 (-.001)	-.002 (-.030)										.333	.330
(2)	.582* (.579)	.135* (.082)	.004 (.022)	.007 (.032)	.000 (.016)	-.002 (-.032)	1-11,14- 16,18,21	--								.369	.350
(3)	.585* (.582)	.132* (.080)	.004 (.026)	.007 (.031)	.000 (.017)	.001 (.020)	1-6,8-11, 14,15,18, 20,21	--	-.001* (-.076)							.371	[illegible]
(4)	.370* (.368)	.007 (.004)	-.000 (-.002)	.006 (.026)	.001 (.031)	.001 (.026)	1-6,8-11, 14-16, 18,20,21	--	-.000 (-.020)	.004 (.004)	-.050* (-.056)	.012 (.010)	.471* (.420)	-.006 (-.008)	.061* (.066)	.532	.522
ENTRO9 (1)	.065 (.042)	.178* (.070)	.019* (.071)	-.015 (-.047)	.001 (.033)	.006* (.078)										.016	.012
(2)	.058 (.038)	.185* (.073)	.016 (.059)	-.013 (-.040)	.001 (.019)	.005* (.069)	18,9	--								.042	.025
(3)	.055 (.036)	.189* (.075)	.015 (.057)	-.013 (-.041)	.001 (.019)	.002 (.031)	18,9,4	--	.000 (.048)							.042	.025
(4)	-.052 (-.034)	.102 (.040)	.011 (.042)	-.013 (-.041)	.000 (.009)	-.003 (-.033)	2,18,9 4	--	.001 (.051)	-.008 (-.005)	.036 (.026)	.069 (.037)	.098 (.057)	.240* (.247)	.039 (.043)	.125	.105
CONVO9 (1)	1.109* (.642)	.270* (.095)	-.010 (-.035)	.015 (.041)	-.001 (-.025)	-.003 (-.033)										.427	.424
(2)	1.112* (.643)	.205* (.072)	-.010 (-.033)	.016 (.045)	-.000 (-.011)	-.003 (-.031)	20,11 10	--								.438	.428
(3)	1.105* (.639)	.212* (.075)	-.011 (-.038)	.016 (.044)	-.001 (-.012)	-.009* (-.108)	2,20,5 11,8,10	--	.001* (.098)							.440	.430
(4)	.653* (.377)	.066 (.023)	-.012 (-.042)	.015 (.041)	-.000 (-.001)	-.010* (-.113)	20,11,8 10		.001* (.103)	-.051 (-.030)	[illegible] (.018)	.066 (.031)	.148* (.077)	-.005 (-.004)	.359* (.354)	.539	.528

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[a] Group 4. listwise N = 1643. See Table A-1.

[b] See note b, Table 6.1.1.

*Significant at α < .05; standardized coefficients in parentheses.

It appears, then, that to the extent that black and white interest profiles do diverge, these differences have worked themselves out before high school and simply persist thereafter. Sex differences, on the other hand, are more pronounced, arise early and actually increase as youth mature and develop socially.

Just as with race effects, parental status characteristics influence most ninth grade interests indirectly, that is, due to their consequences for earlier activity patterns. Investigative and Artistic interests, on the other hand, are directly enhanced by high status origins, and the latter as well by parental education even after controlling for seventh grade activity levels. These differences, although significant, are extremely modest, however.

Achievement is again negatively related to Realistic interests and positively to Artistic ones. However, at the ninth grade increased achievement also leads to increased participation in Investigative and Conventional pursuits, both of which are depressed by increased ability. These latter effects are contrary to the argument advanced above to account for the quite different seventh grade pattern of ability and achievement influences. It may be that the ability effects, as small and scattered as they are, are aberrations and that, with the greater diversification of ninth grade curriculum activities relative to the seventh grade, there is more academic spill over into Investigative and Conventional domains (e.g., reading scientific books and magazines, doing science experiments, watching educational programs on television; sewing, embroidering and knitting are examples of activities tapped in these two scales which likely could be engaged in with relation to upper level science and home economics courses).

The addition of seventh grade levels of pre-occupational activity to the background characteristics increases the power of our ninth grade equations tremendously. Absolute increments of 10 to 20 percent in R^2 reflect relative gains of from 25 (Realistic) to 400 percent (Enterprising). The only prior activity which enhances Enterprising activities in the ninth grade is their corresponding seventh grade level. All other types of endeavor, however, are affected by at least two types of prior interests. Although, as would be expected, the major determinant of all interests is their parallel seventh grade expression, the "cross-domain" influences all are pretty much consistent with both stereotypic sex divisions and the Holland descriptions of activity types. Thus, a secondary predictor of Conventional pursuits is Social participation, and vice versa. Social participation is, however, depressed by Investigative orientations -- a result predictable from the Holland schemata (see Table B.1 for a description of the Holland types by interests of incumbents). Artistic interests are depressed by Social ones, as is Investigative participation. The latter, though, is enhanced by Realistic undertakings. Realistic pursuits are responsive to the widest range of influences, being enhanced by earlier Investigative and Social interests,[3] and depressed by Artistic activities.

In summary, then, in the ninth grade sample sex effects are pronounced, prior interests greatly increase our ability to explain later interests, and "cross-domain" interest influences are relatively unimportant, though reasonable when they are observed. This pattern is continued in the eleventh grade (see Table 6.1.3). Senior high school interests are only slightly more explicable than are earlier ones; Enterprising activities are the

Table 6.1.3 Determinants of 11th Grade Pre-Occupational Interests[a]

INDEPENDENT VARIABLES

OUTCOME[b]	SEX	RACE	FAED67	MOED67	FAOC67	ABIL63	+ SCHOOLS	−	REAL07	INVE07	ARTS07	SOCL07	ENTR07	CONV07	REAL09	INVE09	ARTS09	SOCL09	ENTR09	CONV09	ACHV67	CURR67	R^2	ADJ R^2
REAL11 (1)	-.645* (-.628)	-.068* (-.040)	.003 (.015)	.006 (.027)	.000 (.004)	-.004* (-.075)																	.399	.396
(2)	-.654* (-.627)	-.023 (-.013)	.005 (.031)	.005 (.023)	.001 (.020)	-.004* (-.067)	13,1,20, 4	--															.416	.406
(3)	-.453* (-.435)	-.049 (-.029)	.002 (.011)	.004 (.020)	.001 (.023)	-.002* (-.046)	13,1,20, 6	--	.304* (.296)	.032 (.034)	-.043 (-.034)	.070* (.061)	-.000 (-.000)	-.019 (-.032)									.480	.472
(4)	-.260* (-.249)	-.013 (-.007)	.005 (.028)	.004 (.016)	.000 (.005)	-.002 (-.031)	1,20, 14,4	--	.139* (.136)	.017 (.019)	.008 (.005)	.015 (.013)	-.005 (-.008)	-.013 (-.021)	.449* (.440)	-.020 (-.022)	-.044 (-.034)	.060* (.058)	-.000 (-.000)	-.016 (-.028)			.574	.563
(5)	-.261* (-.251)	-.024 (-.014)	.005 (.027)	.004 (.019)	.000 (.005)	.001 (.015)	13,1,7 20,4	--	.139* (.135)	.018 (.019)	.009 (.007)	.016 (.013)	-.005 (-.008)	-.015 (-.024)	.461* (.441)	-.018 (-.019)	-.044 (-.034)	.057* (.055)	.001 (.001)	-.016 (-.023)	-.001* (-.084)	.046 (.042)	.576	.565
INVE11 (1)	-.277* (-.236)	.095* (.049)	.017* (.084)	.008 (.032)	.002* (.057)	.008* (.134)																	.103	.099
(2)	-.260* (-.219)	.093 (.048)	.016* (.081)	.006 (.026)	.001 (.038)	.008* (.141)	--	9,15,14, 10															.132	.116
(3)	-.201* (-.172)	.072 (.037)	.012 (.058)	[illegible]	.001 (.033)	.006* (.095)	--	21,9,15, 8,10	-.030 (-.026)	.330* (.329)	.050 (.036)	-.055 (-.042)	-.010 (-.024)	.006 (.008)									.220	.203
(4)	-.113* (-.096)	.038 (.020)	.011 (.053)	.002 (.007)	.000 (.008)	.004* (.061)	19	9,15,10	-.042 (-.037)	.120* (.122)	.002 (.002)	.021 (.016)	-.026 (-.035)	-.001 (-.002)	-.055 (-.049)	.477* (.450)	.059 (.040)	-.085 (-.067)	.010 (.013)	-.025 (-.037)			.367	.351
(5)	-.110* (-.093)	.046 (.024)	.010 (.050)	.001 (.003)	.000 (.004)	.001 (.010)	--	9,10	-.040 (-.035)	.127* (.121)	.003 (.002)	.024 (.018)	-.027 (-.037)	-.000 (-.030)	-.048 (-.043)	.477* (.455)	.049 (.033)	-.049 (-.042)	.008 (.011)	-.028 (-.038)	.00 (.164)	.023 (.018)	.369	.352
ARTS11 (1)	.107* (.219)	.131* (.084)	.017* (.090)	.013* (.072)	.002* (.094)	.010* (.233)																	.166	.163
(2)	.107* (.219)	.099* (.064)	.015* (.103)	.012* (.069)	.002* (.095)	.010* (.226)	2,7	15															.190	.180
(3)	.096* (.112)	.055 (.039)	.011* (.072)	.007 (.039)	.002* (.077)	.006* (.130)	13,2,10 7,22,8	15	-.030 (-.036)	.032 (.041)	.420* (.416)	-.027 (-.028)	.009 (.017)	-.003 (-.005)									.342	.327
(4)	.042 (.049)	.014 (.010)	.004 (.027)	.007 (.039)	.001 (.035)	.003* (.064)	2,7,22	--	-.012 (-.015)	-.005 (-.006)	.107* (.143)	.002 (.002)	.004 (.063)	-.013 [illegible]	-.038 (-.046)	.055* (.073)	.575* (.536)	.025 (.030)	.012 (.023)	-.008 (-.017)			.537	.526
(5)	[illegible] (.051)	.016 (.012)	.004 (.024)	.006 (.036)	.001 (.031)	.001 (.032)	2,7,22	--	-.011 (-.013)	-.008 (-.007)	.108* (.144)	.004 (.004)	.004 (.007)	-.012 (-.024)	-.035 (-.042)	[illegible] (.070)	.561* (.527)	.029 (.034)	.012 (.021)	-.009 (-.015)	.000 (.035)	.025 (.020)	.539	.526
SOCL11 (1)	.592* (.562)	.131* (.077)	.002 (.013)	-.000 (-.002)	-.000 (-.004)	-.002 (-.028)																	.323	.321
(2)	.592* (.567)	.141* (.082)	.004 (.024)	.004 (.018)	.000 (.010)	-.001 (-.020)	1-6,10 8-11,14	--															.348	.337
(3)	.443* (.421)	.039 (.023)	.001 (.004)	.003 (.012)	.001 (.020)	.000 (.002)	1,2,4,6 8-11,10	--	.044 (.042)	-.060* (-.064)	.048 (.038)	.370* (.315)	-.005 (-.007)	.032* (.057)									.449	.437
(4)	.274* (.260)	.033 (.019)	.001 (.004)	-.001 (-.002)	-.000 (-.000)	-.000 (-.004)	10,11	--	.023 (.022)	-.047* (-.049)	.017 (.013)	.130* (.110)	-.005 (-.007)	-.001 (-.001)	.054* (.053)	.012 (.013)	.056 (.043)	.466* (.444)	.008 (.011)	.019 (.031)			.567	.556
(5)	.271* (.257)	.018 (.010)	.001 (.004)	.000 (.002)	-.000 (-.000)	.004* (.046)	6,10,11	--	.021 (.020)	-.043* (-.049)	.019 (.015)	.130* (.110)	-.004 (-.038)	-.003 (-.024)	.042 (.042)	.016 (.017)	.060* (.046)	.480* (.459)	.008 (.013)	.021 (.036)	-.001* (-.122)	.052* (.048)	.572	.560
ENTR11 (1)	.211* (.137)	.340* (.134)	-.002 (-.009)	-.002 (-.006)	.003* (.060)	.005* (.058)																	.038	.035
(2)	.207* (.134)	.372* (.147)	-.003 (-.013)	-.000 (-.001)	.002 (.062)	.005* (.050)	7	--															.059	.042
(3)	.193* (.125)	.308* (.122)	-.008 (-.031)	-.001 (-.003)	.002 (.052)	.001 (.010)	2,7,9	21	-.015 (-.010)	.046 (.048)	.079 (.042)	.167* (.136)	.170* (.103)	-.054* (-.063)									.114	.095
(4)	.205* (.132)	.277* (.110)	-.012 (-.044)	.001 (.005)	.002 (.044)	[illegible] (.002)	--	21	-.026 (-.017)	.033 (.023)	.030 (.016)	.102* (.059)	.113* (.117)	-.074* (-.082)	.033 (.022)	.052 (.038)	.060 (.031)	.054 (.035)	.264* (.263)	.003 (.004)			.189	.168
(5)	.204* (.132)	.267* (.106)	-.012 (-.045)	.002 (.008)	.002 (.042)	.002 (.026)	7	21	-.026 (-.017)	.032 (.023)	.013 (.017)	.103* (.060)	.113* (.117)	-.076* (-.083)	.028 (.018)	.054 (.039)	.058 (.030)	.052 (.036)	.264* (.264)	.005 (.005)	-.001 (-.090)	.056 (.035)	.190	.168
CONV11 (1)	1.130* (.690)	.207* (.067)	-.013 (-.039)	.020* (.051)	-.001 (-.023)	-.004* (-.047)																	.499	.497
(2)	1.318* (.702)	.162* (.053)	-.011 (-.036)	.019* (.049)	-.000 (-.010)	-.004* (-.039)	20	16,15															.509	.501
(3)	.912* (.486)	.047 (.015)	-.012 (-.036)	.018* (.047)	.000 (.000)	-.001 (-.011)	20	2,1,7, 16,15	-.080* (-.053)	-.024 (-.014)	.146 (.020)	.171* (.092)	-.020 (-.021)	.212* (.247)									.559	.549
(4)	.642* (.342)	.025 (.008)	-.007 (-.023)	.012 (.030)	-.000 (-.002)	-.002 (-.021)	--	2,1,7,16, 15,14	-.078 (-.042)	-.039 (-.023)	.006 (.002)	.082 (.039)	-.019 (-.016)	.131* [illegible]	.011 (.006)	.015 (.009)	.021 (.009)	.086 (.046)	-.017 (-.016)	.374* (.385)			.619	.609
(5)	.641* (.342)	.019 (.006)	-.008 (-.023)	.012 (.011)	[illegible] (-.002)	-.001 (-.004)	--	2,1,16, 15	-.079 (-.043)	-.039 (-.023)	.007 (.003)	.082 (.039)	-.019 (-.016)	.131* (.120)	.007 (.004)	.016 (.010)	.021 (.009)	.084 (.045)	-.015 (-.013)	.375* (.365)	-.000 (-.024)	.024 (.012)	.619	.609

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[a] Group 4 listwise N = 1643. See Table A-1.

[b] See note b, Table 6.1.1.

*Significant at α ≤ .05; standardized coefficients in parentheses.

least predictable ($R^2 = .19$) and Conventional the most ($R^2 = .62$). Unlike with the seventh-ninth grade comparisons, we see only little evidence that the typical interests of men and women have grown further apart between the ninth and eleventh grades. The total sex effects are about the same at these two grade levels (compare Tables 6.1.3 and 6.1.2) and for all activity domains most of the eleventh grade sex differentials are transmitted through the prior impact of sex on earlier interests. At the same time the modest direct sex coefficients that remain (generally on the order of half to a third of the total) even after seventh and ninth grade activity patterns are controlled suggest that some portion of this sex-typing is generated anew, or at least reinforced, through intervening experiences that are independent of earlier interests. Hence, we find evidence of both stability and change in the sex-typing of adolescent interests, even as late as the latter years of high school. Males still evidence their propensity to engage in Realistic and Investigative pursuits and females their tendency to develop Social and Conventional interests. At this age we do, however, find a newly emergent difference in Enterprising activity, with females tending to score higher on this domain. The female advantage in Artistic interests remains, but is indirect through seventh and ninth grade pursuits.

As noted earlier, most racial differences beyond the seventh grade reflect simply continuity of interest patterns established by at least the seventh grade. The exception to this involves Enterprising interests -- blacks are noticeably more likely than whites to engage in this sort of activity, and especially to come upon these interests late in high school. The extent to which these interests affect later work activities will be examined in Chapters 10 and 11, below.

Parental status characteristics do not directly enhance eleventh graders' manifest interest patterns. The influences of all three such indicators disappear once prior activity levels are taken into consideration. Ability and achievement also evidence few effects in the final (5) equations.

Although these results indicate considerable stability in interest domains over time, still a simple chain model does not adequately characterize the data. Not surprisingly, the effects of ninth grade scores on the parallel eleventh grade outcomes are consistently the largest, but earlier, seventh grade, activity preferences continue to impact directly on eleventh grade outcomes. Specifically, each interest has as its first and second most important contributor among the interest scales its parallel ninth and seventh grade scores, respectively. Other interest influences at the eleventh grade are minor.

Although the parallel seventh grade activity level is the second most influential activity determinant of eleventh grade pre-occupational interests, it is not necessarily the second most influential impact in the equations. A comparison of standardized coefficients indicates that the betas for sex usually surpass those of the parallel seventh grade interests. In fact, this holds in four of the six areas -- Realistic, Social, Enterprising, and Conventional. This serves to remind us that societal expectations and early socialization remain powerful influences and that they are not counteracted as youth begin to explore areas of pre-occupational activity.

Table 6.1.4 Absolute Increments in the R^2's for the Interest Scales Effected by Background and Prior Interests[a]

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	7th[b]	9th			11th		TOT[b]	TOT[b]	TOT[b]
	% BACK.	% BACK.	% INTER. 7th	% BACK.	% INTER. 7th	% INTER. 9th	R^2 7th	R^2 9th	R^2 11th
R	36	45	10	40	7	9	37	57	58
I	10	11	19	10	9	15	12	33	37
A	14	16	20	17	15	20	16	40	54
S	15	33	16	32	10	12	17	53	57
E	6	2	8	4	5	8	9	12	19
C	37	43	10	50	5	6	38	54	62

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[a] R^2 multiplied by 100.

[b] Columns 7 and 1 are not the same because of the addition (directly after the background block) of school dummies to the final equation. Similarly, the sums of columns 2 and 3 will underestimate the figures in column 8, and the sums of columns 4-6 will underestimate the figures in column 9.

These expectations initially constrain exploration and continue to do so independently of their initial formative impact on youthful activity. Table 6.1.4 summarizes approximate absolute increments to the R^2's (multiplied by 100) effected by the addition of background characteristics (largely representing sex and race effects) and blocks of interest scores to these equations. Background characteristics are at least as effective in explaining later interests as they are earlier interests. Where very notable sex differences occur (Realistic, Conventional and Social activities), prior interests are able to increase explained variation by only 25 to 50 percent, even when two previous measurements are used as in the eleventh grade predictions.

Thus, these analyses underscore the speculations advanced at the beginning of this section: (1) Pre-occupational interests are rather stable over the high school years and knowledge of junior high school manifest interests greatly increases our ability to explain senior high school activity levels; (2) sex of student is often as important a contributor to the explanation of interest patterns as are prior interests; and (3) since sex is such a powerful predictor of many of these types of activity, unguided career decision-making is unlikely to appreciably alter sex-typical career patterns and preferences, even despite the appearance of seemingly significant changes in sex roles and sex role orientations among contemporary youth.

6.2 PRE-OCCUPATIONAL INTERESTS AND HIGH SCHOOL EDUCATIONAL OUTCOMES

It is reasonable to anticipate that pre-occupational interests might affect career decision-making and later educational and work experiences through their consequences for high school attainments. Patterns of discretionary time utilization might either enhance or detract from academic achievement. Moreover, insight regarding one's interests and abilities probably should influence decisions concerning either the need to continue or the desirability of continuing on into college. Of course, decisions regarding higher education are crucial to later vocational progress. Accordingly, we examined the impacts of the six types of pre-occupational interests on six high school outcomes: (1) junior and (2) senior year educational plans; whether one has (3) applied to and (4) been accepted into college as of January and February of the senior year (they are the months in which the senior year survey was fielded); and (5) verbal and (6) quantitative SAT performance during the twelfth grade. Thus, two plans, two behaviors, and two skill measures serve to tap the role of manifest interests in the early career decision-making and educational attainment process.

Contrary to expectation, the data presented in Tables 6.2.1 through 6.2.5 indicate that interests are essentially irrelevant to these sorts of schooling outcomes. In both the AEQ and the GROUP 4 samples, the addition of all six interest scales results in absolute increments in explained variance of less than one percent for every dependent variable! The only consistent positive finding (Tables 6.2.2, 6.2.3) is that Artistic interests seem modestly to enhance college orientations, although even here the coefficients are not large.

The only other tendencies worthy of note in these tables regarding interest effects are the indications that Artistic activities might depress

Table 6.2.1 The Prediction of Junior Year Educational Plans from Pre-Occupational Interests Among Two Groups of Youth[a]

		INDEPENDENT VARIABLES																
		SEX	RACE	FAED	MOED	ABIL67	SCHOOLS +	 -	ACHV67	CURR67	REAL11	INVE11	ARTS11	SOCL11	ENTR11	CONV11	R^2	ADJ R^2
GROUP4 EDEXJR	(1)	.022 (.027)	.182* (.133)	.011* (.075)	.013* (.073)	.011* (.354)											.158	.155
	(2)	.010 (.012)	.201* (.147)	.010* (.072)	.008 (.044)	.010* (.326)	--	3,5,8 10-12,14									.206	.192
	(3)	-.003 (-.003)	.212* (.156)	.010* (.070)	.006 (.035)	.003 (.083)	--	3,5,8 10-12,14	.002* (.280)								.220	.206
	(4)	.017 (.020)	.185* (.136)	.004 (.031)	.004 (.026)	-.000 (-.006)	18	5,12,14	.001* (.183)	.337* (.383)							.305	.292
	(5)	-.038 (-.046)	.167* (.123)	.004 (.028)	.004 (.021)	-.000 (-.004)	18	5,12,14	.001* (.177)	.332* (.377)	-.012 (-.015)	.017 (.024)	.013 (.013)	.020 (.025)	.024* (.045)	.025 (.056)	.312	.296

		SEX	RACE	FAED	MOED	ABIL63	SCHOOLS +	 -	ACHV63	CURR63	REAL11	INVE11	ARTS11	SOCL11	ENTR11	CONV11	R^2	ADJ R^2
AEQGP2 EDEXJR	(1)	-.023 (-.027)	.005 (.003)	.028* (.174)	.021* (.119)	.002* (.099)											.083	.079
	(2)	-.025 (-.030)	.005 (.003)	.026* (.162)	.018* (.103)	.002* (.099)	--	3									.089	.080
	(3)	-.014 (-.017)	.125* (.071)	.022* (.136)	.008 (.042)	-.001 (-.050)	--	--	.002* (.358)								.184	.175
	(4)	.026 (.030)	.105* (.059)	.015* (.091)	.001 (.006)	-.001* (-.064)	--	--	.001* (.177)	.419* (.449)							.325	.316
	(5)	-.013 (-.015)	.102 (.058)	.015* (.089)	.002 (.009)	-.001* (-.062)	--	--	.001* (.167)	.420* (.451)	-.063 (-.075)	-.032 (-.041)	.036 (.037)	.003 (.004)	.001 (.002)	-.020 (-.044)	.331	.318

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[a] The Group 4 sample is listwise N = 1643; the AEQGP2 sample is listwise N = 947. See Tables A-1 and A-2.

*Significant at $\alpha \leq .05$.

Table 6.2.2 The Prediction of Senior Year Educational Goals, and the Status of Application to and Acceptance by College from Pre-Occupational Interests for the Class of 1969[a]

	INDEPENDENT VARIABLES																		
						SCHOOLS													ADJ
OUTCOME[b]	SEX	RACE	FAED	MOED	ABIL67	+	-	ACHV67	CURR67	REAL11	INVE11	ARTS11	SOCL11	ENTR11	CONV11	EDEXJR	EDEXSR	R^2	R^2
EDEXSR (1)	-.063* (-.070)	.234* (.157)	.017* (.108)	.025* (.132)	.013* (.391)													.242	.240
(2)	-.082* (-.091)	.229* (.154)	.014* (.089)	.017* (.090)	.012* (.356)	--	1-5,7,8, 10-14,16,20											.322	.310
(3)	-.076* (-.084)	.213* (.144)	.008* (.049)	.013* (.072)	.001 (.019)	18	2-5,7,8, 10-14,16	.001* (.194)	.355* (.372)									.417	.406
(4)	-.064* (-.071)	.210* (.142)	.007 (.046)	.013* (.071)	.000 (.011)	18	2-5,7,8 10-14,16	.001* (.198)	.351* (.368)	.014 (.016)	-.050* (-.064)	.057* (.053)	-.015 (-.017)	.023 (.039)	-.018 (-.038)			.423	.410
(5)	-.054 (-.059)	.165* (.111)	.006 (.039)	.012* (.066)	.000 (.012)	--	2-5,7 10-14,20	.001* (.154)	.262* (.274)	.017 (.020)	-.054* (-.070)	.053* (.050)	-.020 (-.024)	.016 (.028)	-.025 (-.051)	.270* (.249)		.465	.453
APPLID (1)	-.010 (-.010)	.103* (.063)	.025* (.143)	.010 (.047)	.015* (.406)													.231	.229
(2)	-.023 (-.024)	.121* (.074)	.023* (.132)	.009 (.043)	.015* (.397)	4,6-9, 22	21											.273	.260
(3)	-.020 (-.020)	.109* (.067)	.018* (.104)	.006 (.029)	.006* (.147)	2,4,6,7, 9,22	21	.001* (.151)	.273* (.260)									.321	.308
(4)	-.025 (-.025)	.104* (.063)	.016* (.093)	.005 (.024)	.005* (.139)	4,6,7,9, 15,22	8,21	.001* (.143)	.264* (.251)	.012 (.012)	-.007 (-.008)	.099* (.085)	-.002 (-.002)	-.003 (-.005)	-.005 (-.010)			.326	.311
(5)	-.018 (-.018)	.074 (.045)	.015* (.089)	.004 (.021)	.005* (.140)	4,6,7,9, 15,22	21	.001* (.118)	.206* (.196)	.014 (.015)	-.010 (-.011)	.097* (.083)	-.005 (-.005)	-.008 (-.012)	-.009 (-.018)	.175* (.146)		.341	.326
(6)	.011 (.011)	-.015 (-.009)	.012* (.070)	-.002 (-.012)	.005* (.134)	1-7,12-16, 9,10,22	17,21	.000 (.042)	.064* (.061)	.005 (.005)	.020 (.023)	.068* (.058)	.006 (.006)	-.016 (-.025)	.004 (.008)	.028 (.024)	.544* (.494)	.471	.459
ADMITD (1)	.026 (.031)	-.042 (-.031)	.016* (.111)	-.002 (-.011)	.007* (.237)													.091	.088
(2)	.026 (.032)	.019 (.014)	.016* (.115)	.003 (.016)	.007* (.237)	1-20	--											.193	.179
(3)	.028 (.034)	.013 (.009)	.014* (.096)	.001 (.007)	.002 (.067)	1-20	--	.001* (.105)	.151* (.174)									.214	.200
(4)	.021 (.026)	.007 (.006)	.013* (.089)	.001 (.005)	.002 (.060)	1-20	--	.000 (.091)	.147* (.169)	-.022 (-.028)	-.006 (-.009)	.064* (.067)	-.010 (-.013)	.007 (.013)	-.013 (-.030)			.218	.201
(5)	.025 (.030)	-.008 (-.006)	.012* (.086)	.001 (.003)	.002 (.060)	1-20	--	000 (.075)	.117* (.135)	-.021 (-.026)	-.008 (-.011)	.063* (.066)	-.012 (-.015)	.005 (.009)	-.015 (-.035)	.090* (.091)		.224	.206
(6)	.036 (.044)	-.043 (-.032)	.011* (.077)	-.002 (-.012)	.002 (.058)	1-20	--	.000 (.039)	.061* (.070)	-.025 (-.031)	.003 (.005)	.052* (.054)	-.007 (-.010)	.001 (.002)	-.010 (-.023)	.032 (.032)	.216* (.237)	.254	.236

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[a] Group 4, listwise N = 1643. See Table A-1.
*Significant at $\alpha \leq .05$; standardized coefficients in parentheses.

Table 6.2.3 The Prediction of Senior Year Educational Goals and the Status of Application to and Acceptance by College from Pre-Occupational Interests for the Class of 1965[a]

INDEPENDENT VARIABLES

OUTCOME		SEX	RACE	FAED	MOED	ABIL63	SCHOOLS +	SCHOOLS -	ACHV63	CURR63	REAL11	INVE11	ARTS11	SOCL11	ENTR11	CONV11	EDEXJR	EDEXSR	R^2	ADJ R^2
EDEXSR	(1)	-.148* (-.165)	-.012 (-.006)	.034* (.201)	.024* (.130)	.002* (.129)													.137	.133
	(2)	-.150* (-.168)	-.038 (-.020)	.028* (.161)	.015* (.079)	.002* (.144)	--	2-4											.193	.184
	(3)	-.105* (-.118)	.061 (.033)	.017* (.101)	-.001 (-.006)	-.000 (-.005)	--	2-4	.001* (.186)	.355* (.364)									.365	.356
	(4)	-.132* (-.148)	.050 (.027)	.017* (.099)	-.003 (-.014)	-.000 (-.003)	--	2-4	.001* (.170)	.350* (.358)	-.026 (-.029)	-.034 (-.043)	.078* (.076)	-.008 (-.010)	.006 (.011)	-.014 (-.028)			.370	.358
	(5)	-.129* (-.144)	.022 (.012)	.013* (.075)	-.003 (-.016)	.000 (.014)	--	2-4	.001* (.126)	.235* (.240)	-.009 (-.010)	-.003 (-.032)	.068* (.066)	-.009 (-.011)	.006 (.010)	-.008 (-.017)	.275* (.262)		.416	.404
APPLID	(1)	-.058 (-.057)	-.214* (-.101)	.021* (.109)	.030* (.140)	.005* (.247)													.151	.146
	(2)	-.052 (-.051)	-.153* (-.072)	.025* (.126)	.034* (.161)	.005* (.236)	2-4	--											.179	.170
	(3)	-.003 (-.003)	-.007 (-.003)	.013* (.066)	.014* (.066)	.001 (.056)	2-4, 22,23	--	.002* (.290)	.356* (.319)									.372	.364
	(4)	-.006 (-.006)	-.021 (-.010)	.011 (.059)	.011 (.052)	.001 (.055)	2-4, 23	-- --	.002* (.260)	.342* (.306)	-.026 (-.026)	-.015 (-.016)	.130* (.111)	-.055 (-.058)	.029 (.045)	-.019 (-.035)			.383	.371
	(5)	-.005 (-.005)	-.030 (-.014)	.010 (.052)	.011 (.052)	.001* (.060)	2-4, 23	--	.002* (.247)	.303* (.272)	-.020 (-.020)	-.012 (-.013)	.127* (.108)	-.055 (-.058)	.028 (.045)	-.018 (-.032)	.092* (.077)		.387	.375
	(6)	.062 (.060)	-.042 (-.020)	.003 (.017)	.012* (.059)	.001* (.054)	2-4, 22,23	--	.001* (.189)	.181* (.162)	-.016 (-.015)	.002 (.002)	.092* (.078)	-.050 (-.053)	.026 (.040)	-.013 (-.024)	-.051 (-.042)	.520* (.455)	.508	.498
ADMITD	(1)	.041 (.058)	-.086 (-.059)	-.006 (-.041)	.003 (.023)	.002* (.144)													.032	.027
	(2)	.044* (.062)	-.020 (-.014)	.000 (.001)	.012* (.082)	.002* (.120)	2-4	--											.138	.129
	(3)	.061* (.085)	.057 (.039)	-.004 (-.032)	.002 (.023)	-.000 (-.006)	2-4	--	.001* (.258)	.095* (.123)									.212	.202
	(4)	.052 (.073)	.049 (.033)	-.005 (-.003)	.002 (.014)	-.000 (-.006)	2-4	--	.001* (.252)	.090* (.117)	.007 (.010)	-.006 (-.009)	.033 (.040)	.003 (.005)	.005 (.011)	.001 (.002)			.214	.198
	(5)	.053 (.075)	.039 (.027)	-.006 (-.044)	.002 (.013)	.000 (.001)	2-4	--	.001* (.233)	.051 (.066)	.013 (.019)	-.003 (-.004)	.029 (.036)	.003 (.005)	.005 (.010)	.003 (.007)	.093* (.112)		.222	.206
	(6)	.080* (.113)	.035 (.024)	-.009 (-.063)	.003 (.017)	-.000 (-.003)	2-4	--	.001* (.200)	.002 (.003)	.015 (.021)	.003 (.004)	.015 (.018)	.005 (.008)	.003 (.008)	.004 (.011)	.036 (.044)	.209* (.263)	.263	.247

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[a] Group AEQGP2, listwise N = 947. See Table A-2.

*Significant at $\alpha \leq .05$; standardized coefficients in parentheses.

Table 6.2.4 Prediction of Verbal and Quantitative SAT Scores from Pre-Occupational Interests for the Class of 1969[a]

INDEPENDENT VARIABLES

OUTCOME		SEX	RACE	FAED	MOED	ABIL67	SCHOOLS +	SCHOOLS -	ACHV67	CURR67	REAL11	INVE11	ARTS11	SOCL11	ENTR11	CONV11	EDEXJR	EDEXSR	R^2	ADJ R^2
SAT-V	(1)	19.919* (.084)	17.892* (.046)	1.532* (.038)	1.523 (.031)	7.388* (.818)													.685	.684
	(2)	[illegible]8.453* (.078)	17.960* (.046)	1.298 (.032)	1.498 (.030)	7.352* (.814)	--	5											.691	.686
	(3)	11.865* (.050)	23.618* (.061)	1.111 (.027)	.606 (.012)	3.208* (.355)	1	--	.801* (.520)	3.363 (.013)									.741	.736
	(4)	15.466* (.065)	20.656* (.053)	.648 (.016)	.511 (.010)	3.151* (.349)	1	7	.757* (.491)	1.128 (.005)	-8.370* (-.037)	9.512* (.047)	20.221* (.073)	-8.573* (-.038)	3.655 (.024)	-4.659* (-.037)			.750	.745
	(5)	15.460* (.065)	20.683* (.053)	.648 (.016)	.512 (.010)	3.151* (.349)	1	7	.757* (.491)	1.181 (.005)	-8.372* (-.037)	9.515* (.047)	20.223* (.073)	-8.570* (-.038)	3.659 (.024)	-4.655* (-.037)	-.163 (-.001)		.750	.745
	(6)	15.843* (.067)	19.508* (.050)	.605 (.015)	.424 (.009)	3.148* (.349)	1	--	.751* (.487)	-.687 (-.003)	-8.495* (-.037)	9.902* (.049)	19.844* (.071)	-8.424* (-.037)	3.543 (.023)	-4.478 (-.035)	-2.091 (-.007)	7.139 (.027)	.751	.745
SAT-M	(1)	-27.413* (-.105)	-3.764 (-.009)	1.692* (.038)	1.961* (.036)	7.548* (.763)													.649	.648
	(2)	-29.278* (-.112)	-4.521 (-.011)	.916 (.021)	1.683 (.031)	7.457* (.753)	19,1,7,6, 9,15	--											.666	.660
	(3)	-31.284* (-.120)	-3.927 (-.009)	.174 (.004)	.943 (.017)	4.530* (.458)	1,6,7,15, 19,9-11	--	.447* (.265)	39.431* (.144)									.695	.689
	(4)	-24.290* (-.093)	-1.652 (-.004)	.210 (.005)	.866 (.016)	4.532* (.458)	19,1,6,7 9-11,15	--	.457* (.271)	39.620* (.144)	10.259* (.041)	2.993 (.013)	-3.819 (-.013)	-5.022 (-.020)	-5.323* (-.031)	4.045 (.029)			.697	.690
	(5)	-23.788* (-.091)	-3.864 (-.009)	.156 (.003)	.819 (.015)	4.534* (.458)	19,1,6,7, 9-11,15	--	.444* (.263)	35.239* (.128)	10.413* (.042)	2.767 (.012)	-3.992 (-.013)	-5.287 (-.021)	-5.550* (-.033)	3.719 (.027)	13.213* (.042)		.698	.691
	(6)	-22.701* (-.087)	-7.199 (-.017)	.033 (.001)	.568 (.011)	4.525* (.457)	19,1,6,7 9-11,15	--	.426* (.252)	29.932* (.109)	10.066* (.040)	3.865 (.017)	-5.067 (-.017)	-4.874 (-.020)	-5.878* (-.035)	4.221 (.030)	7.737 (.025)	20.274* (.070)	.701	.694

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[a] Group 4, listwise N = 1643. See Table A-1.

*Significant at $\alpha \leq .05$; standardized coefficients in parentheses.

Table 6.2.5 Prediction of Verbal and Quantitative SAT Scores from Pre-Occupational Interests for the Class of 1965[a]

INDEPENDENT VARIABLES

OUTCOME		SEX	RACE	FAED	MOED	ABIL63	SCHOOLS		ACHV63	CURR63	REAL11	INVE11	ARTS11	SOCL11	ENTR11	CONV11	EDEXJR	EDEXSR	R^2	ADJ R^2
							+	-												
SAT-V	(1)	-3.484 (-.015)	-77.916* (-.159)	5.868* (.129)	7.735* (.157)	1.726* (.371)													.286	.282
	(2)	-4.879 (-.021)	-64.085* (-.131)	5.306* (.117)	6.848* (.139)	1.657* (.356)	--	3,22											.302	.294
	(3)	2.283 (.010)	9.542 (.019)	2.697* (.059)	.188 (.004)	.115 (.025)	23	--	1.316* (.844)	4.511 (.017)									.766	.763
	(4)	5.054 (.021)	9.057 (.018)	2.335* (.051)	-.228 (-.005)	.110 (.024)	--	--	1.266* (.812)	2.201 (.009)	-10.877* (-.047)	.187 (.001)	26.864* (.099)	-17.335* (-.079)	3.170 (.022)	-5.532 (-.043)			.777	.773
	(5)	5.078 (.021)	8.946 (.018)	2.319* (.051)	-.230 (-.005)	.111 (.024)	--	--	1.265* (.811)	1.746 (.007)	-10.809* (-.046)	.221 (.001)	26.825* (.098)	-17.339* (-.079)	3.169 (.022)	-5.510 (-.043)	1.084 (.004)		.777	.772
	(6)	6.346 (.027)	8.727 (.018)	2.192* (.048)	-.201 (-.004)	.109 (.023)	--	--	1.258* (.807)	-.570 (-.002)	-10.725* (-.046)	.475 (.002)	26.155* (.096)	-17.249* (-.078)	3.114 (.021)	-5.430 (-.042)	-1.625 (-.006)	9.858 (.037)	.778	.773
SAT-M	(1)	-59.627* (-.244)	-73.565* (-.145)	5.018* (.107)	6.076* (.120)	1.762* (.367)													.290	.286
	(2)	-61.387* (-.251)	-51.528* (-.102)	4.138* (.088)	4.794* (.094)	1.675* (.349)	--	3,4, 22											.314	.307
	(3)	-51.820* (-.212)	10.329 (.020)	1.267 (.027)	-1.489 (-.029)	.324* (.068)	--	22	1.037* (.645)	39.047* (.146)									.653	.649
	(4)	-60.499* (-.248)	10.652 (.021)	1.542 (.033)	-1.058 (-.021)	.333 (.069)	--	22	1.062* (.660)	41.394* (.155)	.172 (.001)	-4.598 (-.021)	-11.600 (-.041)	1.004 (.004)	-3.915 (-.026)	8.239* (.062)			.657	.651
	(5)	-60.269* (-.247)	8.858 (.017)	1.286 (.027)	-1.085 (-.021)	.351* (.073)	--	22	1.045* (.650)	34.020* (.127)	1.273 (.005)	-4.043 (-.018)	-12.238 (-.044)	.950 (.004)	-3.934 (-.026)	8.594* (.065)	17.544* (.061)		.660	.653
	(6)	-58.517* (-.240)	8.555 (.017)	1.110 (.024)	-1.045 (-.021)	.348* (.072)	--	22	1.035* (.643)	30.820* (.115)	1.389 (.006)	-3.693 (-.017)	-13.164* (-.047)	1.075 (.005)	-4.010 (-.026)	8.706* (.066)	13.801* (.048)	13.623* (.050)	.661	.654

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[a] Group AEQGP2, listwise N = 947. See Table A-2.

*Significant at $\alpha \leq .05$; standardized coefficients in parentheses.

quantitative achievement while enhancing verbal skills and that Realistic and Conventional pursuits have somewhat the opposite consequences (see Tables 6.2.4 and 6.2.5). These effects are neither large, nor consistently significant, yet the pattern is plausible and the trends, at least, run in these directions. It is interesting as well that these sex-typed interests reproduce the sex-patterning of achievement differentials. Women typically are strong in verbal areas and men in quantitative, and "female" interests appear to modestly enhance performance in the former domain, while "male" interests do so in the latter.

Although the few significant effects and the interesting patterns in these data are in line with theoretical expectations, we must emphasize that their practical implications are quite trivial. Thus, despite the fact that manifest interests are moderately explicable and consistent across the high school years, they themselves do not appear to have much bearing upon a broad range of important high school educational outcomes.[4]

6.3 PRE-OCCUPATIONAL INTERESTS AND WORK VALUES

The first five years following high school graduation are transitional years for youth. The majority of adolescents at eighteen years of age have had little or no full time work experience (see Chapter 9). Of course, many youth enter the labor market full time upon high school completion. For these youth, career decision-making in anticipation of career initiation probably should be completed at least by the first year or two after graduation. This is the time for exploring actual options in the labor market, and for attempting to clarify specific occupational likes and dislikes, strengths and weaknesses, in formulating long term career plans. In Super's (1953) framework, these youth would be completing the developmental tasks of Crystallization, Specification, and Implementation. These also supposedly are critical years for career planning and preparation for youth who manage to postpone labor market entry while attending college. Interests are explored further, major fields of study are chosen and curricula become oriented increasingly to career lines, even if only in the most general of senses.

In this section we investigate the role played by pre-occupational interests in influencing work values articulated during these transitional years. Other variables used in these analyses are race, sex, parental status, ability and achievement test performance, and curriculum track in high school. Finally, we also control for secondary school effects by using dummy variables to represent the seven schools included in the follow-up sample (see Chapter 2).

AEQ respondents who were working or had plans to work outside of the home[5] were asked to rate 25 job characteristics according to their importance for whether the respondent would take a job if it were available to him or her (see Chapter 5, Section 1). These ideal job rewards, or work values, were clustered into six dimensions: earnings or extrinsic rewards (EARNS-V); social service (SERV-V); engagement in the work routines themselves (ENGAG-V); the people or work associations (ASSOC-V); the power or authority accruing to the position (POWER-V); and the degree to which the job was not overly demanding in time or effort (SINEC-V). We would expect that earnings would be valued by those persons with Realistic and Enterprising interests, social service valued by persons with Social and perhaps Artistic interests, engagement by high Realistic, Investigative, and Artistic persons, associations by Social and perhaps Conventional individuals, and power and responsibility by Enterprising types, with Investigative, Realistic, and Artistic persons valuing this dimension to the degree that it implied autonomy.

Speculations aside, however, the data in Table 6.3.1 demonstrate that pre-occupational interests are no more relevant for the formation of work values than they were for educational outcomes in high school. The addition of all six interest scales contributes an absolute increase in explained variance of less than 1 1/2 percent across all six value dimensions.

The few effects that are evidenced are, however, sensible. Artistic persons devalue the extrinsic returns to work (EARNS) and less demanding (SINEC) work while considering important the benefits accruing to others (SERVE) through their job performance. Realistic and Enterprising individuals are not much concerned with personal associations on the job. Additionally, in all instances but that of "sinecure" (SINEC), the interest scales mediate the impact of sex on values, an expected result given the large mean sex differences on several of the interest scales.

These scattered relations aside, however, these results offer little indication that the knowledge and experience gained through participation in discretionary activities during high school inform youths' work values to any appreciable degree.

Table 6.3.1 The Prediction of Work Values from Pre-Occupational Interests for the Class of 1965[a]

	INDEPENDENT VARIABLES																
						SCHOOLS											ADJ
OUTCOME[b]	SEX	RACE	FAED	MOED	ABIL63	+	-	ACHV63	CURR63	REAL11	INVE11	ARTS11	SOCL11	ENTR11	CONV11	R^2	R^2
EARNS-V (1)	-.161* (-.112)	.221* (.078)	-.033* (-.120)	-.022* (-.073)	-.005* (-.155)											.093	.089
(2)	-.158* (-.110)	.304* (.108)	-.027* (-.098)	-.015 (-.049)	-.005* (-.166)	2-4	--									.119	.111
(3)	-.174* (-.121)	.160 (.057)	-.021* (-.075)	.003 (.009)	-.001 (-.020)	2-4	--	-.003* (-.314)	-.032 (-.021)							.181	.173
(4)	-.158* (-.110)	.168* (.060)	-.019* (-.069)	.009 (.029)	-.001 (-.023)	2-4	--	-.003* (-.295)	-.005 (-.003)	.006 (.004)	.034 (.026)	-.211* (-.125)	-.038 (-.028)	.007 (.008)	.057 (.072)	.195	.183
SERVE-V (1)	.252* (.140)	.034 (.010)	.026* (.076)	.002 (.004)	.000 (.004)											.026	.022
(2)	.255* (.142)	.077 (.022)	.031* (.090)	.007 (.018)	-.000 (-.002)	2,4	--									.038	.030
(3)	.289* (.161)	.034 (.010)	.026* (.076)	.002 (.007)	.000 (.011)	2,4	--	-.001* (-.113)	.313* (.164)							.057	.047
(4)	.102 (.057)	-.023 (-.007)	.023* (.066)	-.002 (-.006)	.000 (.011)	2,4	--	-.002* (-.135)	.268* (.141)	-.134 (-.078)	.088 (.054)	.189* (.090)	.030 (.018)	.015 (.013)	.040 (.041)	.072	.057
ENGAG-V (1)	.073* (.063)	.032 (.014)	.020* (.091)	-.008 (-.032)	-.001 (-.026)											.011	.006
(2)	.074* (.064)	.097 (.042)	.022* (.098)	-.005 (-.01[illegible])	-.001 (-.034)	4	--									.024	.015
(3)	.084* (.072)	.087 (.038)	.021* (.092)	-.006 (-.026)	-.001 (-.031)	2,4	--	-.000 (-.041)	.085 (.069)							.027	.017
(4)	.083 (.072)	.078 (.034)	.020* (.091)	-.007 (-.027)	-.001 (-.034)	2,4	--	-.000 (-.035)	.078 (.06[illegible])	.046 (.041)	.035 (.033)	.008 (.005)	-.011 (-.010)	-.032 (-.045)	.045 (.070)	.033	.018
ASSOC-V (1)	.214* (.168)	-.030 (-.012)	-.012 (-.051)	-.006 (-.019)	-.003* (-.114)											.046	.042
(2)	.215* (.168)	.035 (.014)	-.013 (-.054)	-.005 (-.019)	-.003* (-.120)	--	--									.053	.045
(3)	.205* (.160)	-.046 (-.018)	-.010 (-.039)	.005 (.018)	-.001 (-.027)	--	22	-.002* (-.195)	-.031 (-.022)							.079	.069
(4)	.115 (.090)	-.044 (-.018)	-.009 (-.035)	.009 (.034)	-.001 (-.027)	--	22	-.002* (-.185)	-.013 (-.010)	-.110* (-.090)	.029 (.025)	-.094 (-.063)	-.010 (-.008)	-.051* (-.065)	.046 (.066)	.093	.079
POWER-V (1)	-.339* (-.238)	.064 (.023)	.015 (.056)	.011 (.037)	.001 (.029)											.063	.059
(2)	-.339* (-.238)	.128 (.046)	.018* (.067)	.014 (.048)	.001 (.020)	3	--									.072	.064
(3)	-.325* (-.228)	.106 (.038)	.016 (.060)	.013 (.043)	.001 (.030)	3	--	-.001 (-.067)	.134* (.088)							.078	.068
(4)	-.274* (-.192)	.109 (.039)	.015 (.057)	.012 (.040)	.001 (.028)	3	--	-.001 (-.066)	.126* (.083)	.047 (.035)	.037 (.028)	.002 (.001)	.019 (.014)	-.004 (-.005)	-.014 (-.018)	.079	.065
SINEC-V (1)	-.173* (-.106)	.254* (.079)	-.016 (-.050)	-.003 (-.009)	-.002 (-.046)											.027	.023
(2)	-.177* (-.108)	.263* (.082)	-.017 (-.055)	-.008 (-.024)	-.002 (-.051)	--	--									.031	.023
(3)	-.175* (-.107)	.285* (.089)	-.018 (-.058)	-.011 (-.031)	-.002* (-.070)	--	--	.000 (.044)	-.001 (-.000)							.032	.022
(4)	-.202* (-.123)	.302* (.094)	-.017 (-.053)	-.004 (-.011)	-.002* (-.069)	--	--	.000 (.045)	.035 (.020)	-.127 (-.081)	.012 (.008)	-.105* (-.096)	-.075 (-.049)	.031 (.031)	.015 (.017)	.047	.032

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[a] Group AEQGP2, listwise N = 1167. See Table A-2.

[b] See text for variable abbreviations.

*Significant at $\alpha \le .05$; standardized coefficients in parentheses.

6.4 THE SIGNIFICANCE OF INTERESTS

Pre-occupational manifest interests are stable over the high school years and can be predicted moderately well from demographic characteristics and tests of academic aptitude and achievement. They themselves, however, do not exercise appreciable influence on educational outcomes later in the junior and senior years of high school or on work values. While such manifest interests seemingly exist and are reasonably patterned, they apparently have little significance beyond whatever immediate gratification they might confer. Perhaps, though, we have expected too much of such discretionary activity. If so, however, we are not alone in this wishful thinking, since this is quite common in the vocational/career development literature.

Some of the most reasonable, although very small, effects documented in this chapter were those of interests on SAT performance. To a small degree outside activities contributed to verbal and quantitative skills. Given the relatively little time that students were engaged in occupationally oriented activities (see means in Chapter 4) relative to school attendance, this amount of transference strikes us as noteworthy.

We find, too, that values concerning the desirable attributes of jobs are determined largely by societal norms and socioeconomic position rather than interests. Our data indicate small contributions of sex, race and parental status to the formation of values, and the high overall means (see Chapter 5) reflect the almost universal appeal of most of these characteristics. It is possible, of course, that as one accumulates a work history, experience with actual work routines will become increasingly important for work values. If so, then the importance of one's personal biography may increase with age.

Our comments here by-and-large are limited to conjecture regarding the apparent failure of interests to translate into school outcomes and work values. In later chapters we will consider whether they are any more important in influencing the character of the work these youth actually obtain in the years immediately after high school graduation, focusing on the routines or activities their jobs entail and the rewards they confer.

FOOTNOTES

[1] Tables A-1 and A-2 in Appendix A present means and standard deviations on selected variables for these subgroups of students as well as pairwise present statistics from the full samples.

[2] In all of the analyses in this portion (A), controlling for between school variation resulted in 2 to 3 percent (absolute) increments to R^2. The main effects which were significant are noted in terms of schools having significant positive or negative increments; no patterns of particular substantive interest (urban/rural, geographic location, etc.) emerged from these differences across Tables 6.1.1 - 6.1.3.

[3] This effect may reflect the sports, social maturity, and automotive linkages imbedded in these scales which would begin to surface at around age 15.

[4] School effects range from about 2 to 6% for all outcomes except acceptance by a college; the suppressed school in both samples, school "24" and its sister schools 22 and 23 are located in a state with an extensive junior college system. The approximate 10% increment induced by school differences in the case of this outcome reflects the ease of admission to, and thus late application to, state schools. Other effects evidence no pattern. A total of 23 school dummies were entered into the equations for the GROUP 4 sample, and 6 for those equations estimated on the AEQ respondents.

[5] See Table A-2, Appendix A, for a presentation of means and standard deviations on selected variables within these samples as well as the parallel pairwise statistics from the parent sample.

Chapter 7 -- The Planning Process During Adolescence

Career decision making is a dynamic process, supposedly involving the formation of tentative plans and goals, the testing of their desirability and feasibility, and their successive refinement during the adolescent years. These exploratory behaviors help crystallize vocational goals (e.g., Super, 1953; 1963; Gribbons and Lohnes, 1968; 1969). In this view, the planning process itself is of value, irrespective of the particular vocational plans that are formulated. This process does not guarantee solid or realistic goals, but without such planning the probability of effective career decision making is radically reduced. In this chapter we explore whether, in fact, adolescents do plan for their futures during the high school years as various perspectives on career decision making and career development assume. We examine three different aspects of this process: first, whether students in junior high school plan for their senior high school years; second, how often adolescents think about their educational and vocational futures; third, how often and with whom adolescents discuss their educational and vocational futures. In the final section of this chapter we examine the extent to which such planning activities can be anticipated from student background characteristics and earlier school experiences.

7.1 PLANNING FOR THE HIGH SCHOOL YEARS

One of the major decisions facing a junior high school student, and the one we will examine here, is senior high school curriculum choice. A student's high school track placement exerts profound effects upon his later achievement, educational goals, and post-secondary educational prospects, even after prior abilities, achievements, interpersonal supports, and motivations are taken into account (Alexander, Cook and McDill, 1978). Although high school students probably do not appreciate fully the extent to which track placement affects their futures, most nevertheless likely realize that the decision will have some bearing on their lives for at least the remaining high school years, and hence that they should not be entirely capricious in their choice.[1]

Senior high school typically begins at grade ten, but other grade structures are quite common. Some of the students in our sample attend high schools that encompass eighth through twelfth, and ninth through twelfth grades, as well as the pattern usually associated with the terms "junior" and "senior" high school, namely seventh through ninth, followed by tenth through twelfth. Thus, when seventh grade students are asked "What curriculum do you plan to take in high school?" the actual transition itself could be from three years to only one year distant. Likewise, some ninth graders will have already "chosen" their "high school" curriculum and would report realities rather than plans when asked such a question, while others would be reporting plans concerning a transition point a year (or less) away.

As indicated by the data in Table 7.1.1, over half of the seventh graders were undecided about their future track preferences. Of those who had made plans for enrollment, over twice as many students were aiming for non-college tracks as were expressing preference for an academic program

Table 7.1.1 Percent of Junior High School Youth in Group 4 Planning to Enroll in Various Curricula in High School

		Curriculum Plans For High School	
		7th %	9th %
Academic		14.4	45.4
	(N)	(523)	(2285)
Agriculture		2.0	1.6
	(n)	(74)	(80)
Business		6.8	12.4
	(n)	(245)	(625)
General		3.6	8.0
	(n)	(131)	(402)
Home Economics		7.2	2.3
	(n)	(260)	(116)
Vocational		1.8	3.9
	(n)	(65)	(195)
Other		12.0	5.6
	(n)	(436)	(283)
Undecided		52.1	20.9
	(n)	(1889)	(1051)
Total	(N)	(3623)	(5037)

Table 7.1.2 Patterns of Preference Formation: Curriculum Choices for the High School Years in a Longitudinal Sample of 7th and 9th Graders

	%	N	%	(n)	%	(n)
Total Persons with data in both years	100.0	3435				
Both years in same "track"	28.4	977				
Both academic			11.2	384		
Both "other"			4.3	149		
Both undecided[c]			12.9	444[a]		
Changed over two years	71.6	2458				
Changed to academic			37.2	1279		
from other					12.9	443
from undecided					24.3	836
Changed to "other"			26.3	903		
from academic					2.1	73
from "other"					9.7	333
from undecided					14.5	497
Changed to undecided[c]			8.0	276		
from academic					1.4	49
from "other"					6.6	227
	100.0	3435	100.0	3435	71.5	2458

---

[a] This represents 25% of those who were undecided in 1963.

[b] This represents 34% of those who changed, and 47.0% of those who were undecided in 1963 (1777).

[c] These two groups total 720, 21% of the ninth graders who were undecided as to their curriculum plans for high school; 51.7% of seventh graders (1777) in this panel were undecided.

at any sort of decision concerning an imminent transition in their school careers. Of course, most of these eventually will be tracked despite their having no clear sense of their own preferences. These are the students most likely to be swept along by the rush of circumstances. The model of rational planning and sober self-reflection that so permeates the literature on career decision making hardly seems applicable to this substantial minority of youth. Second, only a small percentage of students (15 - 16%) have "crystallized" their curriculum decisions in the sense of having stable plans over a two year period. Third, almost ten percent of these adolescents have abandoned earlier decisions in the face of an approaching transition. Finally, there is considerable shuffling of plans in junior high school, with over half of those who change their goals (1279 of 2458) opting for the academic curriculum. This last conclusion supports the assumption that many adolescents are indeed assessing and re-assessing, and hence may be engaging in some sort of meaningful planning process. On balance though, the first three conclusions indicate that this is hardly a universal condition and that the outcomes of this "process" might as often be spontaneous impulse as solidly grounded career decisions.

7.2 PLANNING FOR POST-HIGH SCHOOL EDUCATIONAL AND VOCATIONAL FUTURES

Two items were included in the seventh, ninth, and eleventh grade instruments which questioned students about the degree to which they were planning for their futures. The first question, "OCCTHOT" in Table 7.2.1, asked whether, in the last two years, the student had seriously considered

Table 7.2.1 Percentages of Youth in the Group 4 and AEQGP2 Samples Who Have Given Thought to Their Vocational Careers in Grades 7 through 12

	GROUP4				AEQGP2	
OCC THOT[a]	DURING LAST TWO YEARS, HAVE YOU THOUGHT ABOUT LIFE'S WORK/OCCUPATION					
	7th	9th	11th	12th	11th	12th
% No	34.4	34.5	25.9	25.1	23.7	17.5
(n)	(1245)	(1738)	(1445)	(1370)	(407)	(308)
% Yes	65.6	65.5	74.1	74.9	76.3	82.5
(n)	(2378)	(3297)	(4124)	(4079)	(1309)	(1454)
(N)	(3623)	(5035)	(5569)	(5449)	1716	1762
Male $\bar{X}$	.591	.593	.672	.675	.665	1.761
Female $\bar{X}$	.715	.713	.807	.820	.831	1.877
Black $\bar{X}$	.653	.610	.738	.793	.702	1.819
White $\bar{X}$	.658	.664	.743	.740	.773	1.830
ETA^2 S[b]	.017*	.016*	.024*	.028*	.037*	.023*
ETA^2 R[b]	.000	.002*	.000	.002*	.002*	.000

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[a] OCC THOT: During the last two years, have you seriously considered any occupation(s) for your life's work? OCC THOT07 - OCC THOT11 coded 0, 1; OCC THOT12 for AEQGP2 coded 1, 2.

[b] ETA^2 - S is eta squared for sex effect; ETA^2 - R is eta squared for race effect.

any occupation(s) for his life's work (in the seventh grade the question was limited to asking "have you thought about what you'd like to do for your life's work," emphasis added). This item appeared again on the senior questionnaire. In the seventh grade, a third of the students had not given any thought to their vocational career choice; by the twelfth grade 25 percent still had not "seriously" considered any occupations for their futures. Furthermore, females were somewhat more likely than males to have seriously considered their vocational futures. Although these sex differences are not great (see the squared-etas in Table 7.2.1), they nevertheless are quite consistent: in all four administrations, 70 to 80 percent of females responded in the affirmative whereas 60 to 70 percent of males did so.

At the very least, then, a fourth of these adolescents were not giving serious consideration to their future careers, even at a point three to five months prior to graduation from high school! We have other data, given in Table 7.2.2, which are even more dismaying. A small number (673 from GROUP 4, 303 from GROUP 2) of original senior questionnaires were located and the first question on the instrument, "OCCTHOT12," was coded by the Hopkins staff for occupational aspirations (see Chapter 2, The Sample, above). After asking the student if any thought had been given to an occupation, those replying in the affirmative were asked to write in the occupation in a blank directly below the "NO-YES" options. Upon coding the occupational aspiration responses into detailed census classifications, several reasons for a value not being assigned were distinguished (see Chapter 3). These are presented in Table 7.2.2.

Again we find that about a quarter of the students (26% in GROUP 4, 16% in GROUP 2) respond that they have not given serious thought to

Table 7.2.2 Patterns of "Non-Response" on Senior Occupational Aspiration Question

CODE			GROUP4 MALE	GROUP4 FEMALE	AEQGP2 MALE	AEQGP2 FEMALE
001-986	Valid Occupational Code for Census Civilian		46.7%	62.6%	63.9%	86.5%
		(n)	(133)	(243)	(85)	(147)
991-994	Valid Occupational Code for Census, Military; & Housewife		1.1%	.8%	3.8%	0.0%
		(n)	(3)	(3)	(5)	(0)
997	Listed an Occupation Not Codable in Census Scheme		8.4%	5.7%	3.0%	4.7%
		(n)	(24)	(22)	(4)	(8)
995	Said "YES" to SRQST1 but Left Occupation Blank		4.2%	3.1%	1.5%	1.8%
		(n)	(12)	(12)	(2)	(3)
996	Said "NO" to SRQST1 and Left Occupation Blank		34.4%	20.6%	27.1%	7.1%
		(n)	(98)	(80)	(36)	(12)
998	Skipped SRQST1		5.3%	7.2%	.8%	0.0%
		(n)	(15)	(28)	(1)	(0)
Total N of Senior Questionnaires		(N)	(285)	(388)	(133)	(170)
Total "Questionable" (Codes 995, 996, and 998)			43.9%	30.9%	29.3%	8.8%
		(n)	(125)	(120)	(39)	(15)

occupational choice (code 996). Males are much more likely than are females to respond in this manner. An additional six percent of the GROUP 4 students skipped (code 998) the question entirely. We can only speculate that it was either irrelevant to or unanswerable by these students. Finally, about four and two percent of the 1969 and 1965 seniors, respectively, replied that they had thought about one or more occupations for their futures but did not record any occupational preference (code 995). Here we must assume that, although these students were presumably engaging in career planning, they had not progressed far enough in their thinking to formulate specific occupational preferences. Hence, with the exception of GROUP 2 women, fewer than two-thirds (and in the case of GROUP 4 men, fewer than half) of these youth, even as late as the senior year of high school, have given serious thought to their occupational careers and could articulate their thinking with sufficient detail to permit its translation into the categories of the detailed occupational classification of the Bureau of the Census. Thus, these data seem to suggest that, at a time when adolescents are assumed to be engaging in exploratory behavior and approaching the "crystallization" stage of career choice, more than a third fail to evidence the sort of future-orientation commonly assumed in career development theory.

The second item concerning planning activity "ED/OCC FUTR" in Table 7.2.3, asked seventh, ninth, and eleventh graders how often during the last two years they had thought about their educational and vocational futures, a broader reference than in the OCCTHOT item. The frequency of this sort of future-oriented thought does increase over the four years spanned by these cross-sections. By the eleventh grade only about five

Table 7.2.3 Percentages of Youth in the Group 4 and AEQGP2 Samples Who have Given Thought to Their Educational and Vocational Futures in Grades 7 through 11

		GROUP4		AEQ
ED/OCC FUTR[a]	DURING TWO YEARS, HAVE YOU THOUGHT OF EDUC & VOC FUTURE			
	7th	9th	11th	11th[b]
% Rarely	15.2	12.6	4.3	7.1
(n)	(550)	(598)	(234)	(121)
% Occasionally	49.3	52.8	36.4	29.4
(n)	(1785)	(2501)	(1993)	(505)
% Frequently	35.5	34.6	59.3	63.5
(n)	(1288)	(1640)	(3244)	(1090)
(N)	(3623)	(4739)	(5471)	(1716)
Male $\overline{X}$	2.175	2.147	2.445	1.435
Female $\overline{X}$	2.230	2.287	2.649	1.655
Black $\overline{X}$	2.159	2.148	2.514	1.345
White $\overline{X}$	2.211	2.233	2.558	1.592
ETA^2 S[c]	.016*	.012*	.031*	.030*
ETA^2 R	.001	.002*	.001*	.014*

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[a] ED/OCC FUTR: During the last two years, how often have you thought about your educational and vocational plans after high school?

[b] These means are 1.00 lower than those for Group 4 because responses were coded 0-2 rather than 1-3.

[c] ETA^2 - S is eta squared for sex effect; ETA^2 - R is eta squared for race effect.

percent of the students report that they rarely or never have indulged in such reflection. Conversely, however, only 60 percent of eleventh graders (in 1967) report frequent concern with these circumstances of their impending adulthood. And, again, young women are more future-oriented than are their male peers.

According to all of the estimates obtained in this, as well as the last section, 20 to 40 percent of adolescents appear to be undecided about or unconcerned with the particular educational or vocational decisions/transitions that they all will confront in the near future.

7.3 PLANNING IN CONSULTATION WITH SIGNIFICANT OTHERS

If the figures in Table 7.2.3 regarding thought about the future are at all valid, we would expect adolescents to discuss their educational and vocational futures with others even less often than they have contemplated them themselves. Comparing the percentages in Table 7.2.3 with those in Table 7.3.1, this does indeed seem to be the case -- adolescents discuss their futures even less often than they ponder them, although such conversations do become considerably more frequent from the seventh to the eleventh grades as one might expect.

When they do discuss their plans, they tend to confide in or seek direction from parents and friends rather than school personnel. Parents, despite the supposed generation gap of the 1960's, are "frequently" consulted by 40 to 50 percent of eleventh graders, and at least "occasionally" consulted by almost 90 percent. Friends are "frequently" the source of

Table 7.3.1 Percentages of Youth Discussing Educational and Vocational Plans with Significant Others in Grades 7 through 11, the Group 4 and AEQGP2 Samples

	EDUCATIONAL & VOCATIONAL PLANS						DISCUSSED WITH SIGNIFICANT OTHERS						AEQ-GP2[b]			
	PARENTS (PARS)			FRIENDS (FRND)			TEACHERS (TEAH)			COUNSELLORS (COUN)						
	7th	9th	11th	7th	9th	11th	7th	9th	11th	7th	9th	11th	PARS11	FRND11	TEAH11	COUN11
% Rarely	29.8	16.6	12.3	31.8	25.7	13.1	74.4	68.2	63.0	83.4	71.3	40.8	12.0	15.7	57.5	39.0
(n)	(1080)	(772)	(661)	(1153)	(1210)	(710)	(2695)	(3149)	(3368)	(3023)	(3277)	(2176)	(206)	(270)	(983)	(667)
% Occasionally	46.6	51.2	45.5	49.0	55.0	52.6	19.8	26.1	30.3	11.9	24.4	46.5	37.3	47.7	35.7	46.1
(n)	(1688)	(2384)	(2451)	(1774)	(2591)	(2864)	(717)	(1205)	(1616)	(430)	(1120)	(2483)	(640)	(819)	(611)	(789)
% Frequently	23.6	32.3	42.2	19.2	19.3	34.3	5.8	5.7	6.7	4.7	4.3	12.7	50.7	36.5	6.8	14.9
(n)	(855)	(1503)	(2274)	(696)	(910)	(1866)	(211)	(263)	(358)	(170)	(198)	(680)	(870)	(627)	(117)	(255)
(N)	(3623)	(4659)	(5386)	(3623)	(4711)	(5440)	(3623)	(4617)	(5342)	(3623)	(4595)	(5339)	(1716)	(1716)	(1716)	(1716)
$\bar{X}$ Male	1.892	2.101	2.197	1.822	1.868	2.398	1.320	1.411	1.453	1.248	1.351	1.683	1.270	1.041	.484	.743
$\bar{X}$ Female	1.978	2.209	2.396	1.920	2.000	2.321	1.310	1.341	1.421	1.181	1.310	1.754	1.468	1.324	.500	.771
$\bar{X}$ Black	1.966	2.144	2.286	1.970	2.020	2.264	1.510	1.519	1.532	1.408	1.411	1.771	1.131	1.054	.512	.655
$\bar{X}$ White	1.933	2.159	2.304	1.858	1.920	2.204	1.283	1.347	1.419	1.182	1.315	1.710	1.422	1.227	.493	.776
ETA^2-S^c	.004*	.006*	.022*	.005*	.010*	.029*	.000	.004*	.001	.004*	.001*	.003*	.020*	.040*	.000	.000
ETA^2-R	.000	.000	.000	.003*	.003*	.001*	.018*	.011*	.004*	.023*	.004*	.001*	.016*	.006*	.000	.003*

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[a] The student was asked how often s/he had talked about his/her educational and vocational plans with parents (PARS), teachers (TEAH), friends (FRND), and councellors (COUN). The options for counsellors were limited to "none," "once or twice," "three or more times;" for the others the options listed were offered.

[b] These means are 1.00 lower than those for Group 4 due to coding of responses "0-2" rather than "1-3."

[c] ETA^2-S is eta squared for sex effect; ETA^2-R is eta squared for race effect.

[*] ETA significantly different from zero at $\alpha \leq .05$.

such counsel for only about 35 percent of students, but they are at least "occasionally" so for about 85 percent of these young people. School counsellors are used as sources of information more often than are classroom teachers, but both are sorely neglected as sources of vocational and educational direction Such a finding is perhaps not surprising but it is unfortunate for the vocational decision-making process, particularly for those youth whose parents are less well educated and/or occupationally situated. Such youths' views of the existing occupational and educational possibilities are limited to those of adults who themselves probably are not especially sophisticated regarding the world of work and to those of similarly ill-informed peers. This pattern of consultation with friends and family, in conjunction with reliance upon similar sources for job search and information seeking (see Chapter 9), could greatly limit the effectiveness of career decision-making processes among disadvantaged youth.

7.4 SELECTED DETERMINANTS OF PLANNING ACTIVITY

In the ninth grade, all six indicators of planning activity (see Table 7.4.1) are moderately inter-correlated. In particular, the more junior high school students think about their futures (ED/OCC FUTR) the more likely they are to talk about their plans with friends (FRND), and, to a lesser degree, school personnel (TEAH, COUN). Such a pattern is to be expected. The correlations involving discussion with parents generally are the strongest ($.16 \leq r^2 \leq .28$) within this cluster of planning variables (excluding

Table 7.4.1 Intercorrelations of Planning Indicators[a]
Among 1969 Graduates as Ninth & Eleventh Graders

Eleventh Grade Measures ($\bar{r}_{xy}$ = .256; ρ_{xy} = .674)	Ninth Grade Measures ($\bar{r}_{xy}$ = .338; ρ_{xy} = .754)					
	PARS	FRND	TEAH	COUN	ED/OCC FUTR	OCC THOT
PARS	.303[c]	.521	.430	.401	.528	.186
FRND	.406	.213[c]	.379	.305	.563	.179
TEAH	.259	.257	.223[c]	.512	.337	.108
COUN	.226	.175	.314	.253[c]	.301	.067
ED/OCC FUTR	.436	.465	.182	.182	.305[c]	.257
OCC THOT	.252	.187	.143	.101	.256	.273[c]
SEX	.124	.162	-.020	.058	.180	.149
RACE	-.042	.006	.089	.043	-.033	.004

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[a] n = 2195 Listwise on 24 variables used in regression spanning years 1963 to 1969; 52% female, 11% black.

[b] See text for variable abbreviations.

[c] The diagonal elements are the cross-time correlations of the parallel indicators; OCC THOT67 (eleventh grade) relates to OCC THOT12 (twelfth grade), r = .305.

the "OCCTHOT" indicators). The sole exception is the high association between the items measuring frequency of discussion with teachers and counsellors. Finally, we find that "OCCTHOT65" is only slightly related to any of the other planning activity indicators. "OCCTHOT," it will be recalled, pertains only to the occupational domain, while other items are of broader scope, encompassing both educational and vocational considerations. This pattern suggests that youth probably are responding to the ED/OCC FUTR measures more in terms of their educational than their vocational content.

By the eleventh grade these inter-correlations generally are lower and their patterning less distinct. Students who think about their futures are likely to discuss them with their parents and friends, but not, it seems, with school personnel. Similarly, discussion with parents no longer serves as a particularly dependable barometer of consultation with other significant others. At the same time, however, it appears that vocational considerations are becoming more salient, for the correlations between OCCTHOT67 (which is vocationally specific) and the more inclusive planning indicators have increased over their ninth grade levels.

Levels of discussion and contemplation in the eleventh grade do not differ appreciably by either race or sex. In fact, they are only moderately responsive even to their own previous levels ($.04 \leq r^2 \leq .09$; see diagonal of Table 7.4.1). The degree to which a youth sought out particular significant others for future-oriented conversation as a junior high school student seemingly has little bearing on later such interaction. In short, planning activity appears to be more generalized in the ninth than the eleventh grade; at both time periods there is a moderate consistency (internal consistency coefficients of approximately .70) in orientation to planning, but this tends to be period specific, for correlations across the junior and senior high school years are very small.

In Table 7.4.2 are presented the coefficients of determination (unadjusted) for the five eleventh grade measures of vocational and educational planning activity (ED/OCC FUTR67, PARS67, FRND67, TEAH67, COUN67) and the eleventh (OCCTHOT67) and twelfth grade (OCCTHOT12) measures of occupational contemplation as obtained from six sets of predictors. Columns (1), (3), (5), and (6) result from the successive inclusion of four blocks of variables: column (1), background characteristics; column (3), ninth grade future orientation and consultation with significant others about future educational and vocational plans; column (5), ninth grade occupational (OCCTHOT) reflection and encouragement for higher education from parents and peers;[2] and column (6), eleventh grade curriculum placement. Columns (2) and (4) assess the impact of curriculum placement in less inclusive versions of the model.

The first fact to be noted from Table 7.4.2 is that relatively small proportions of variance (column 6) in any of these outcomes are explained by our regressions, occupational thought in the twelfth grade (OCCTHOT12) being particularly inexplicable. Second, planning activities in the eleventh grade (rows B-G) are reasonably responsive to the set of prior ninth grade planning activities (compare columns 1 and 3). Thinking about one's future vocational and educational plans (ED/OCC FUTR67) is particularly responsive to background characteristics of the student -- parental status, race, sex,

Table 7.4.2 Unadjusted Coefficients of Determination for Seven Planning Indicators from an Incremental Model of Career Contemplation

	Outcome[a]	Prediction Equations[b] (1)	(2)	(3)	(4)	(5)	(6)
		R^2	R^2	R^2	R^2	R^2	R^2
A.	OCC THOT12	.0225	.0233	.0366	.0370	.0551	.0554
B.	OCC THOT67	.0374	.0379	.0674	.0675	.1135	.1136
C.	ED/OCC FUTR67	.1054	.1122	.1654	.1693	.1769	.1803
D.	PARS67	.0565	.0710	.1302	.1397	.1376	.1446
E.	FRND67	.0429	.0494	.0886	.0926	.0962	.0992
F.	TEAH67	.0137	.0164	.0678	.0694	.0729	.0748
G.	COUN67	.0215	.0277	.0880	.0927	.0919	.0959

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[a] See text for variable abbreviations.

[b] (1) Predictors: FAED67, MOED67, FAOC67, RACEJR, SEX, ABIL65, ACHV65
(2) Predictors: (1) + CURR67
(3) Predictors: (1) + FUTR65, PARS65, FRND65, TEAH65, COUN65
(4) Predictors: (3) + CURR67
(5) Predictors: (3) + THOT65, MOEN65, FAEN65, PRPL65
(6) Predictors: (5) + CURR67

and standardized ability/achievement measures (compare columns 1 and 6). Except in the case of eleventh grade vocational speculation (OCCTHOT67), the encouragement and occupational speculation variables (compare columns 3 and 5) are quite irrelevant once educational and vocational consultation has been taken into consideration. In short, with the exception of future thought (ED/OCC FUTR67), our model is only marginally successful in predicting the occurrence of planning activities among adolescents, although junior high school levels of educational and occupational consultation and reflection do appear to have some influence on later career planning activity. Finally, after consideration of these selected background, consultation and introspection measures, curriculum placement appears to do little to either facilitate or impede planning among youth, at least by the standard of additional contribution to explained variance.

The raw (b) and standardized (β) regression weights for the full model (column 6 of Table 7.4.2) are presented in Table 7.4.3 along with the coefficients of determination and the squared zero-order correlations of the eleventh and twelfth grade outcomes with sex, race, and their ninth grade counterparts. We will limit our discussion largely to those coefficients which are significant and which, in standardized form, are $\geq .10$. At this level of substantive significance, females are more likely than males to contemplate their futures and to discuss their thoughts with parents and friends. For four of the seven outcomes, race effects favor blacks over whites although the differentials are quite small. In only one other instance do background variables other than race and sex significantly influence planning activity. This will be discussed below.

Table 7.4.3 Raw (b) and Standardized (β) Regression Weights for the Prediction of Planning Activity from Background, Consultation, Speculation, Encouragement, and Curriculum Indicators, Group 4 Adolescents[a]

Independent Variables[b]	Dependent Variables[b]													
	OCC THOT12		OCC THOT67		ED/OCC FUTR67		PARS67		FRND67		TEAH67		COUN67	
	b	β	b	β	b	β	b	β	b	β	b	β	b	β
FAED67	-.003	-.024	.006	.044	.010	.052	.015	.068*	.002	.009	-.006	-.028	.006	.025
MOED67	.007	.041	-.003	-.018	-.007	-.031	.005	.018	.001	.003	.005	.019	.008	.029
FAOC67	-.001	-.041	-.000	-.005	.000	.002	-.000	-.003	.001	.044	.001	.030	.000	.002
RACEJR	.010	.007	.060	.042*	.080	.044*	-.001	-.000	.063	.030	.178	.092*	.129	.059*
SEX	.092	.108*	.093	.108*	.151	.136*	.137	.105*	.174	.134*	-.029	-.024	.093	.069*
ABIL65	-.001	-.018	-.000	-.002	.001	.031	-.001	-.026	-.002	-.030	-.001	-.012	.004	.074
ACHV65	.000	.020	.000	.054	.001	.123*	.000	.033	.000	.017	.000	.030	-.001	-.081
ED/OCC FUTR65	.018	.032	.041	.071*	.103	.139*	.010	.012	.054	.063*	.007	.009	.035	.039
PARS65	.017	.032	.064	.118*	.056	.080*	.193	.236*	.065	.080*	.014	.019	.012	.015
FRND65	.015	.027	-.044	-.076*	.050	.067*	.027	.031	.104	.118*	.046	.058*	.011	.012
TEAH65	.032	.047	.021	.030	-.006	-.007	-.015	-.014	-.023	-.022	.149	.155*	.040	.038
COUN65	-.022	-.033	-.014	-.021	-.029	-.032	-.020	-.019	-.028	-.027	.049	.051*	.215	.199*
OCC THOT65	.122	.134*	.210	.225*	.125	.104*	.078	.056*	.071	.051*	.079	.062*	.085	.059*
MOEN65	-.002	-.071*	-.001	-.025	-.002	-.053	.000	.000	-.003	-.073*	-.001	-.036	-.000	-.004
FAEN65	.001	.059	.001	.032	.001	.044	.001	.036	.002	.057	-.001	-.015	.000	.006
PRPL65	.000	.014	-.000	-.025	.000	.012	.001	.031	.001	.056*	.000	.001	.000	.007
CURR67	.018	.020	.009	.010	.085	.074*	.142	.107*	.092	.069*	.069	.056*	.112	.081*
R^2	.0554		.1136		.1803		.1446		.0992		.0748		.0959	
Sex R^{2c}	.0191		.0223		.0323		.0154		.0263		.0004		.0034	
Race R^{2c}	.0000		.0000		.0011		.0017		.0000		.0079		.0019	
Indicator R^{2c}	.0291		.0747		.0931		.0916		.0455		.0497		.0638	

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[a] Listwise N = 2195.

[b] See text for variable abbreviations.

[c] These are the squared zero-order correlations of sex, race, and the parallel prior indicators with the specific outcome of interest.

*Significant at $\alpha \leq .05$.

Occupational forethought in the twelfth grade (OCCTHOT12) is largely a function of sex and ninth grade speculation, whereas the consideration given to future vocational activity in the eleventh grade (OCCTHOT67) is responsive to additional proximal influences -- notably discussion with parents during the ninth grade concerning educational and vocational prospects. Eleventh grade speculation concerning vocational and educational prospects (ED/OCC FUTR67) is enhanced by earlier generalized (β = .139) as well as vocationally specific (β = .104) consideration of future undertakings, by sex, and by achievement. Students who discuss their plans with their parents in the ninth grade are more likely to do so in the eleventh grade also (see PARS67), as are students enrolled in a college track. The major non-demographic influence on discussions with friends, teachers, or counsellors during the senior high school years is the ninth grade level of consultation with these significant others.

These results offer mild support for a developmental model of career decision making insofar as reflection and consultation concerning careers and schooling while in junior high school do contribute to such planning activity during the senior high school years. The relationships between ninth and eleventh grade speculations/discussions are, however, rather weak. Such a finding could indicate that students first begin to consider their futures in senior high school as the issues become increasingly salient. This would be consistent with a perspective that emphasized role transitions in the career-planning process. However, if the planning process is assumed to be incremental and cumulative, this lack of over-time relationship is troublesome. Likewise, the strength of intercorrelations among these indicators within either the ninth or eleventh grades (refer back to Table 7.4.1) suggest that consideration of future options is being explored in discussion with others, as would be predicted. However, the fact that vocationally specific thoughts do not relate very strongly to discussions of vocational and educational plans again suggests that these adolescents are failing, even by grade eleven, to engage in any serious exploration of occupational preferences; rather, their thinking is limited largely to the educational realm. Finally, all of the relationships uncovered in this analysis are modest, at best, and it must be concluded that the most important factors in planning activity during adolescence, whatever they might be, are largely untapped by our model.

FOOTNOTES

[1] Perhaps a better word than "choice" is "preference"; it is reasonable to expect that at least a minority of students are not allowed by school personnel or parents to enter their preferred track.

[2] Students were asked how much their parents (MOEN, FAEN) had encouraged them to go to college, and how many of their friends (or peers) (PRPL) were planning to go to college. Five ordered response options were available. See Chapter 3 for more detail.

Chapter 8 -- The Content of Educational and Vocational Plans

In the previous chapter we examined the extent of planning activity undertaken by adolescents with regard to their educational and vocational futures. In this chapter we explore the content of those plans. Specifically, we first describe how educational plans crystallize over the primary and secondary grades. Next we present the occupational aspirations of youth using three classification schemes (the Major Census categories; occupational prestige; and Holland types). In so doing, we also consider how well the distribution of aspirations corresponds to the existing distribution of opportunities, as this is reflected in the occupational composition of the labor force. Finally, we present brief analyses relating occupational aspirations to pre-occupational interests.

8.1 EDUCATIONAL EXPECTATIONS

The most immediate, and perhaps most important, career decision facing an adolescent when nearing the completion of high school is whether to continue on to higher education. If rational, reflective models of career decision-making are at all accurate, then at least by the junior year of secondary school youths' orientations toward higher education probably should be pretty well established. Deferring a decision much beyond this point leaves little latitude for exploring options, fulfilling requirements, collecting application information, sitting for tests and so forth.

Therefore, students whose educational goals are not firmed up until the senior year of high school probably are not engaging in the most effective career decision-making.

Conversely, however, too early a commitment to postsecondary education probably is undesirable as well, precluding a reasoned determination of whether one's interests, talents and/or disposition recommend further formal schooling. If achieving a college education does not serve simply to reproduce an existing socioeconomic or class hierarchy (as Bowles and Gintis, 1976, among others, would suggest that it does), then we might expect that relatively few youth would have solidified their college goals much before high school. At twelve or thirteen years of age, most youths' orientations to school probably are grounded more in simple likes and dislikes regarding certain courses or school generally than in any recognition of the long-term utility of their early schooling as a stepping stone to career objectives that either clearly do or do not necessitate a college education. Thus, one might anticipate that most college decisions would be made in the early years of high school.[1]

A reasonable measure of the certainty of plans is the duration over which they are held. Available data allow us to assess, albeit somewhat crudely, consistency of "plans to go to college" across five years for a group of 2419 GROUP 4 students who had complete data on educational goals in the seventh, ninth, eleventh, and twelfth grade surveys. Working backwards from the plans voiced in the twelfth grade, we tabulated the numbers of students for whom the same plans were held one year earlier, one and three years earlier, and one, three and five years earlier. This measure of "consistency" is crude in that we don't have a continuous record of plans, so that it likely overstates consistency. It also is crude in the simple distinction that it employs, contrasting "plans to go to college" with all other intentions. In fact, the surveys themselves made available somewhat different options in the "other" category -- a full time job, the military, marriage, and undecided, as well as "other plans, please specify" (see Chapter 3). Thus, although the "college" category itself is directly comparable across years, the agreement that is tabulated on "other" plans is somewhat inflated owing to our inability to distinguish between various non-college preferences.

These tabulations are given in Table 8.1.1. They support some, but not all, of our conjecture concerning how decision making should progress. First, for approximately 80 percent of these adolescents, their senior year educational plans date back at least to the eleventh grade. This is a substantial figure. At the same time, however, it implies that about 20 percent of the students have changed their plans concerning college since fall of the junior year. Of this group, about two-thirds had vacillated between their final and the alternate choice throughout the previous four years, while about a third changed their minds from previously consistent orientations (see notes d and e, respectively, Table 8.1.1). For the vast majority of these latter students, it is interesting to note, their change involved abandoning earlier intentions to attend college, perhaps as a consequence of reality testing with regard to ability or financial resources, or of failure to be accepted into college during the intervening year. Thus, our expectation that the majority of students would have stabilized their

Table 8.1.1 The Crystallization of Educational Plans - 1969 Senior Class

	N	%	(n)	%	Cumulative %
Total Persons in 7th-12th Panel	2419	100.0			54.5
"CRYSTALLIZED" in 7th[a]	1318	54.5			
College Plans			1097	45.3	
Other			221	9.1	
"CRYSTALLIZED" in 9th	350	14.5			69.0
College Plans			291	12.0	
Other			59	2.4	
"CRYSTALLIZED" in 11th[c]	284	11.7			80.7
College Plans			153	6.3	
Other			131	5.4	
"CRYSTALLIZED" in 12th[d]	313	12.9			
College Plans			119	4.9	
Other			194	8.0	
"CHANGED" in 12th[e]	154	6.4			
To College			37	1.5	
To Other			117	4.8	
All 12th Grade Decisions[f]	467	19.3			100.0

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[a] Held consistent plans in 7th, 9th, 11th & 12th.

[b] Held consistent plans in 9th, 11th & 12th.

[c] Held consistent plans in 11th & 12th.

[d] 12th PLANS different from 11th with Prior Pattern Mixed.

[e] 12th PLANS different from a consistent 7th -- 11th pattern.

[f] Total of d and e.

college plans by the eleventh grade is borne out. However, a fifth of the students still are in something of a state of flux regarding their post-secondary educational intentions even during the last year of high school. This is roughly the same proportion of students that was found earlier to be giving little thought as seniors to their educational and vocational futures (see Chapter 7).

Our second expectation, that relatively few students would have finalized their plans as early as junior high school, is not supported by the data. In fact, early educational planning appears to be the rule rather than the exception: 45 percent (see note a, Table 8.1.1) reported in all four waves, beginning with the seventh grade, that they planned to go to college. An additional group, 9 percent, consistently disavowed college intentions. Some of these students, doubtlessly, aspired to careers that dictated their educational goals -- some persons do indeed know from a very early age what it is that they want to do with their lives. For example, 66 percent of seventh graders reported that they had seriously thought about what they wanted to do for their lives' work (see Table 7.2.1) and 36 percent said that they had frequently thought of their educational and vocational futures (see Table 7.2.3). Nevertheless, we are dubious that these figures signify the advent of an era of enlightened career awareness and accelerated vocational maturity. Rather, it is likely that the crystallized plans of many, if not most, of these youth reflect ascribed educational "destinies" into which persons are pushed virtually from birth. There is, in fact, some circumstantial evidence to this effect.

Table 8.1.2 presents means and standard deviations for parental status characteristics for three subgroups of the 2419 persons included in Table 8.1.1: those who had, as of the seventh grade, decided to go to college; those who had, as of the seventh grade, decided not to go to college; and others, that is youth whose plans remained fluid. The trends are unmistakable. Early college-oriented students come from the most advantaged families, non-college oriented youth are from the most disadvantaged homes, and youth who decide on their post-high school goals sometime after the seventh grade are from families of intermediate socioeconomic standing. For example, although 15 percent of the early college youth have fathers with less than a high school education (see Table 8.1.3), the corresponding figure for non-college bound youth is 48 percent. At the other educational extreme, whereas 40 percent of the early college youth have fathers with at least a college education, only about 4 percent of the non-college crystallizers have such highly educated fathers. The trends are quite similar when the three groups of students are compared according to their father's occupational status as well. Of the students who decided by the seventh grade to go to college, 5 percent have fathers who are unskilled laborers (SEI = 8), while 21 percent report having professional fathers (SEI = 75). The respective figures are 21 and 2 percent for youth who decided early on not to attend college. This pattern, though hardly conclusive, at least is consistent with the possibility that a large group of these early "deciders" are reporting their educational futures as dictated by the expectations and resources of their families -- children of professionals can assume they will go to college and children of unskilled laborers may well recognize, even at

Table 8.1.2 Means and Standard Deviations for Parental Status Characteristics for Three Groups of Youth[d]

Status Variables	COLLEGE-7th[a]	NON-COL-7th[b]	OTHERS[c]	TOTAL	ETA^2
Father's Education	14.13 (2.95)	11.26 (2.07)	12.43 (2.83)	13.12 (3.00)	.110
Mother's Education	13.59 (2.48)	11.48 (2.01)	12.30 (2.37)	12.83 (2.51)	.089
Father's Occupation	50.65 (18.65)	33.44 (17.53)	41.60 (19.35)	45.07 (19.69)	.082
% Male	46.9	50.2	47.5		
% Black	9.7	10.9	14.6		

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[a] Those students whose plans to go to college crystallized by the 7th grade.

[b] Those students whose plans to forego college crystallized by the 7th grade.

[c] All other students with four measures of educational plans (7th, 9th, 11th, 12th grades).

[d] Means; standard deviations in parentheses.

Table 8.1.3 Marginal Distributions of Parental Status Characteristics for Three Groups of Youth

YEARS OF EDUCATION		FATHER'S EDUCATION			MOTHER'S EDUCATION			SEI	FATHER'S OCCUPATION		
		COL-7[a]	NCOL-7[b]	OTHER[c]	COL-7[a]	NCOL-7[b]	OTHER[c]	SCORE	COL-7[a]	NCOL-7[b]	OTHER[c]
8		2.7	11.0	9.0	2.2	6.5	5.4	8	4.7	21.0	12.5
	(n)	(28)	(21)	(91)	(24)	(13)	(56)		(51)	(43)	(131)
10		12.1	36.6	23.8	9.5	35.7	22.1	25	1.5	1.5	1.0
	(n)	(127)	(70)	(242)	(102)	(71)	(230)		(16)	(3)	(11)
12		24.9	36.6	32.5	34.3	43.2	43.8	31	13.9	23.4	19.1
	(n)	(262)	(70)	(330)	(367)	(86)	(455)		(150)	(48)	(201)
14		20.5	12.0	17.0	25.2	9.5	15.6	34	16.8	32.2	25.1
	(n)	(216)	(23)	(173)	(270)	(19)	(162)		(181)	(66)	(264)
16		21.3	2.1	9.1	18.8	2.0	7.6	52	4.3	3.4	6.2
	(n)	(224)	(4)	(92)	(201)	(4)	(79)		(46)	(7)	(65)
17		4.2	----	2.4	4.1	1.5	2.3	56	31.9	10.7	21.0
	(n)	(44)	----	(24)	(44)	(3)	(24)		(344)	(22)	(221)
19		14.4	1.6	6.3	5.9	1.5	3.2	68	6.1	6.3	5.6
	(n)	(152)	(3)	(64)	(63)	(3)	(33)		(66)	(13)	(59)
TOTAL CASES		1053	191	1016	1071	199	1039	75	20.9	1.5	9.4
									(226)	(3)	(99)
								TOTAL N	1080	205	1051

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[a] Those students whose plans to go to college crystallized by the 7th grade.

[b] Those students whose plans to forego college crystallized by the 7th grade.

[c] All other students with four measures of educational plans (7th, 9th, 11th, 12th grades).

this early grade level, their relatively dim prospects for high educational attainments. The exceptions are, of course, intriguing. One wonders what leads some children from professional homes to disavow higher education and some children from lower working class homes to cling tenaciously to the idea. In the present context, however, such investigation would lead us far afield. For our immediate purpose, these data are of interest insofar as they bear on the issue of choice in decision making. They suggest that early crystallization may not result from systematic vocational assessment so much as from social expectations and/or advantages deriving from the happenstance of birth.

The content of these plans is, of course, itself of interest. In each of the four cross-sections between the seventh and twelfth grades (see Table 8.1.4) over half of the students in the cohort forming the class of 1969 professed college intentions. The proportion planning to go to college increases consistently from the seventh through the eleventh grade, reaching a high of 71 percent. By the early spring of the senior year, college expectations had dropped a bit, but this may be artificial. Fortunately, the junior and senior year instruments permit a more detailed classification of post-graduation plans than the simple college/other dichotomy employed earlier. The distinctions listed to the right of Table 8.1.4 were those available on the 1967 schedule and could be approximated with the senior year options. The first notable point is that very similar percentages of persons in both years planned to attend a four year

Table 8.1.4 The Expressed Educational Plans of Adolescents -- GROUP 4, 1969 Seniors

	EDUCATIONAL PLANS			
	7th 1963	9th 1965	11th 1967	12th 1969
% COLLEGE	57.8	64.9	71.4	64.1[a]
(n)	(2095)	(3268)	(3326)	(3294)
% NOT COLLEGE	42.2	35.1	28.6	35.9
(n)	(1528)	(1771)	(1331)	(1843)
N	(3623)	(5039)	(4657)	(5137)
Male $\bar{X}$	.560	.644	.699	.670
Female $\bar{X}$	.595	.653	.728	.615
Black $\bar{X}$	.512	.625	.732	.676
White $\bar{X}$	.588	.654	.711	.635
ETA^{2}S[d]	.001*	.000	.001*	.003*
ETA^{2}R	.003*	.000	.000	.001*

	EDUC. PLANS	
	11th 1967	12th 1969
% FULL-TIME JOB OR MILITARY	15.0	21.9[c]
(n)	(700)	(1127)
% 4 YEAR COLLEGE	50.7	48.5
(n)	(2359)	(2489)
% OTHER SCHOOL	20.8	24.7[b]
(n)	(967)	(1267)
% HOUSEWIFE	2.3	1.5
(n)	(108)	(79)
% OTHER	11.2	3.4
(n)	(523)	(175)
N	(4657)	(5137)

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[a] Combines % 4 yr. college and % 2 yr. college (15.7%); vocational technical training omitted.

[b] 15.7% was 2 yr. college, 9.0% training other than college.

[c] 14.7% was full-time job, 7.2% military.

[*] Significant at $\alpha \leq .05$.

[d] S = sex and R = race.

college directly after high school -- 51 percent of the juniors and 48 percent of the seniors. Likewise, plans for other forms of education were quite similar -- 21 and 25 percent of juniors and seniors, respectively. (The drop in college-going intentions mentioned above between the eleventh and twelfth grades may actually be artifically exaggerated since non-academic community college programs could not be separated from academic in the junior year. These figures indicate that overall plans for post-secondary schooling actually are quite comparable.) Thus, about 71 to 73 percent of the youth plan to pursue some form of post high school training, with 50 percent aspiring to a four-year academic program. In light of the proportion of youth aged 18-20 who actually were enrolled in higher education in 1970, these aspirations are not radically out of line with attendance prospects: 31 percent of youth were enrolled in four- and two-year colleges, about 15 percent of youth aged 18-19 had completed a vocational or business program, and approximately 27 percent of 20-24 year olds had obtained a vocational or business certificate (computed from U.S. Bureau of the Census, 1970, Tables 50, 179, and 200).[2]

The post-high school educational plans of 1965 seniors (Table 8.1.5) are not very different from those for 1969 seniors, nor, with one exception, are their non-schooling intentions -- the percentage of youth planning to enter the military in 1969 was almost twice that in 1965. These expectations probably are rather realistic in light of the escalation of the Vietnam effort during that particular period. Finally, we note that few young women intended to undertake the full-time career of "housewife" immediately upon high school graduation.

Table 8.1.5 The Expressed Junior and Senior Year Educational Plans of Adolescents -- AEQGP2, 1965 Seniors

	EDUCATIONAL PLANS 11th 1963	EDUCATIONAL PLANS 12th 1965
% COLLEGE	74.8	68.6[a]
(n)	(1100)	(1132)
% NOT COLLEGE	25.2	31.4
(n)	(371)	(518)
N	1471	1650
Male $\bar{X}$	.746	.749
Female $\bar{X}$	.749	.637
Black $\bar{X}$	.684	.667
White $\bar{X}$	.757	.690
ETA^2S [d]	.000	.014*
ETA^2R	.002	.000

	EDUC. PLANS 12th 1965
% FULL-TIME JOB OR MILITARY	16.9
(n)	(278)
% 4 YEAR COLLEGE	52.4
(n)	(864)
% OTHER SCHOOL	27.2[b]
(n)	(449)
% HOUSEWIFE	1.0
(n)	(17)
% OTHER	2.5
(n)	(42)
N	1650

---

[a] Contains % 4 year and % 2 year (16.2%); technical vocational training omitted.

[b] 16.2% was 2 year college, 11.0% training other than college.

[c] 13.0% was full-time job, 3.9% military.

*Significant at $\alpha \leq .05$.

[d] ETA^2 - S is eta squared for sex effect; ETA^2 - R is eta squared for race effect.

8.2 OCCUPATIONAL ASPIRATIONS OF YOUTH

As indicated earlier (see Chapters 2 and 3), a small number of original senior year questionnaires were located from which occupational aspirations could be coded. These are available for 1969 seniors in three schools in a large urban center and for 1965 seniors in one school from another urban locality.

The first item on the senior instrument asked "During the last two years have you seriously considered any occupation(s) for your life's work?" Students who responded affirmatively were requested to write the name of the occupation(s) on a blank directly following the question. This format also was used on the seventh, ninth, and eleventh grade questionnaires, but these open responses were never coded and the answer sheets were destroyed. From the existing senior questionnaires, the Hopkins staff coded occupations first into detailed census categories (U.S. Bureau of the Census, 1970), and subsequently assigned them status (SEI) scores and occupational types (using Gottfredson, 1976). The reader is referred back to Chapter 3 for information on coding procedures, inter-coder reliabilities, and so forth.

8.2.A. The Typical Aspirations and their Atypicality

If occupations to which students have given serious consideration can be equated with occupational aspirations, students as a group were extremely unrealistic as to the labor-market prospects open to them in the future. Table 8.2.1 indicates that 70 percent of both males and females in the class of 1969 were entertaining professional and technical careers. Females in the earlier, 1965, cohort were slightly more attuned to the realities of the labor market but males, 93 percent of whom aspired to professional or managerial positions, appeared to be expressing occupational choices in almost complete disregard of their reasonableness. By way of comparison, Table 8.2.2, taken from the 1970 Census, presents the distribution of workers with at least a high school diploma over the major census categories. About 38 percent of males and 27 percent of females were employed in Professional, Technical, and Managerial positions.

Not only are aspirations unrealistically distributed across groups; additionally, the specific occupations to which students aspire are woefully limited. Half of the males in the 1969 class aspired to nine occupations (Table 8.2.3): lawyer. "teacher," policeman, doctor, and so forth. Females were equally limited in their goals; 65 percent of the choices were limited to a dozen titles. With only several exceptions (managers, accountant, psychologist) these goals were stereotypically "women's work" -- secretary, nurse, elementary teacher, model, stewardess, etc.[3] The goals in the 1965 group were even more restricted. Sixty-eight percent of the males chose eight titles, and almost 80 percent of the females were grouped into only six. Furthermore, the aspirations of the earlier graduates were even more highly sex-stereotyped than those of the class of 1969. Only one popular occupational choice, "teacher," was common among both males and females.

Although these data indicate that, as a group, these adolescents are unrealistic and somewhat unimaginative, it is more difficult to draw

Table 8.2.1 Census Classification of Senior Year Occupational Aspirations by Sex

	GROUP4 - 1969		AEQ - 1965		CENSUS CODE RANGE
	MALE	FEMALE	MALE	FEMALE	
Column N:	(133)	(243)	(85)	(147)	
Professional, Technical, & Kindred Workers	73.7%	70.0%	85.9%	63.3%	001 - 195
(n)	(98)	(170)	(73)	(93)	
Managers & Administrators	3.0%	3.3%	7.1%	.0%	201 - 245
(n)	(4)	(8)	(6)	(0)	
Sales Workers	2.3%	.8%	.0%	.0%	260 - 285
(n)	(3)	(2)	(0)	(0)	
Clerical & Kindred Workers	.8%	19.3%	1.2%	29.9%	301 - 395
(n)	(1)	(47)	(1)	(44)	
Craftsmen & Kindred Workers	9.0%	.4%	3.5%	.7%	401 - 580
(n)	(12)	(1)	(3)	(1)	
Operatives (Including Transport)	1.5%	.0%	1.2%	.0%	601 - 715
(n)	(2)	(0)	(1)	(0)	
Laborers (Except Farm)	.8%	.0%	.0%	.0%	740 - 785
(n)	(1)	(0)	(0)	(0)	
Farmers & Farm Laborers	.8%	.0%	.0%	.0%	801 - 824
(n)	(1)	(0)	(0)	(0)	
Service Workers (Except Private Household)	8.3%	6.2%	1.2%	6.1%	901 - 965
(n)	(11)	(15)	(1)	(9)	

Table 8.2.2 1970 Census Distribution of Workers With at Least a High School Education Across the Major Occupational Groupings, by Sex

	Men	Women
Professional, Technical and Kindred	22.79%	22.49%
Managers and Administrators, Except Farm	14.79	4.15
Sales	8.78	6.85
Clerical and Kindred	9.37	43.48
Craftsmen	18.26	1.40
Operatives	13.57	7.85
Laborers, except farm	3.74	.59
Farmers, Managers, Laborers and Foremen	2.77	.42
Service Workers	5.93	12.77
Total	28,031,775	18,926,192

Source: Table 231, "Characteristics of the Population: United States Summary, V. 1, Pt. 1, Sec. 2." U.S. Department of Commerce, Bureau of the Census, 1970.

Table 8.2.3 Most Frequently Chosen Specific Occupations

GROUP4 - 1969

MALES (50.4%)[a]					FEMALES (65.0%)[a]				
CENSUS CODE	HOLLAND TYPE	SEI	OCCUPATION	(n)	CENSUS CODE	HOLLAND TYPE	SEI	OCCUPATION	(n)
031	E	92.3	Lawyer	(15)	145*	S	57.7	Non-College Teacher, n.e.c.	(39)
145*	S	57.7	Non-College Teacher, n.e.c.	(15)	372	C	61.0	Secretary	(21)
964	R	40.4	Policeman	(9)	100	S	64.0	Social Worker	(21)
065	I	92.1	Physician	(6)	075	S	44.3	R. Nurse	(16)
194*	A	45.4	Artist, [Model] Writer, n.e.c.	(5)	194*	A	45.4	Artist, [Model] Writer, n.e.c.	(15)
152	R	67.0	Draftsman	(5)	142	S	71.4	Elem. Teacher	(9)
001*	C	76.9	Accountant	(4)	931	E	31.0	Airline Stewardess	(7)
045	I	79.4	Chemist	(4)	001*	C	76.9	Accountant	(6)
245*	E	61.7	Manager, n.e.c.	(4)	076	S	58.9	Therapist	(6)
					093	I	81.0	Psychologist	(6)
					245*	E	61.7	Manager, n.e.c.	(6)
					395	C	44.0	Clerical Worker	(6)

GROUP2 - 1965

MALES (68.2%)[a]					FEMALES (78.9%)[a]				
CENSUS CODE	HOLLAND TYPE	SEI	OCCUPATION	(n)	CENSUS CODE	HOLLAND TYPE	SEI	OCCUPATION	(n)
145*	S	57.7	Non-College Teacher, n.e.c.	(16)	145*	S	57.7	Non-College Teacher, n.e.c.	(47)
001	C	76.9	Accountant	(13)	372	C	61.0	Secretary	(34)
023	I	86.9	Engineer, n.e.c.	(9)	075	S	44.3	R. Nurse	(17)
031	E	92.3	Lawyer	(6)	142	S	71.4	Elem. Teacher	(9)
152	R	67.0	Draftsman	(5)	395	C	44.0	Clerical Worker	(5)
025	R	48.0	Forester & Conservationist	(3)	944	S	17.0	Cosmetologist	(4)
202	E	80.0	Bank Officer & Financial Manager	(3)					
245	E	61.7	Manager, n.e.c.	(3)					

---

[a] Percent of total responses reflected in the options presented.

*Common to Males and Females (i.e., picked by at least 2.5 - 3.0% of each sex) within each panel.

conclusions about the actual occupational knowledge or information being used to inform these choices. Of course, professional and technical jobs are desirable positions and such aspirations may simply reflect awareness of their desirability; however, maintaining such largely unattainable goals provides little basis for realistic career planning and search. Perhaps more significant, however, is the possibility that this pattern does not simply reflect fantasizing for the good life. The clustering of choices into the professional category, together with the limited number of titles mentioned therein, may merely underscore the dearth of occupational information available to these students. It is limited, sketchy, and stereotyped (DeFluer and Menke, 1975; Jordaan and Heyde, 1979). Clearly the choices given do not even exhaust the objectively desirable professional occupations. Were desirability rather than awareness simply at issue, a much broader range of goals probably would be expressed.

8.2.B. Prestige of Occupational Aspirations

As noted earlier, approximately the same proportion of males as females in the class of 1969 aspire to professional jobs. As can be seen from Table 8.2.3, however, only two of the seven most frequent male professional choices (Census code 001-195) had a status score of less than 65, whereas five of the eight most popular female professional choices fall below that level. The picture is similar for the class of 1965 -- within the professional category, male aspirations are aimed toward higher status positions and female's toward lower status ones. This is reflected in the differences between the mean prestige scores for aspirations of males and females given in Table 8.2.4.[4] On the other hand, although males, on the average, aspire to higher status positions, their goals actually are somewhat more diverse. Several skilled crafts and the lure of police and detective work offset somewhat the higher prestige professional goals for boys, whereas girls aspire to the lower prestige professional careers and the moderately esteemed clerical positions. Although this pattern is observed for 1969 seniors, sex differences in career aspirations were somewhat different in 1965. Then both sexes were more homogenous in their goals and the difference of almost 14 SEI points between men and women accounted for approximately 18 percent of the variation evidenced in occupational goals. Overall, however, the aspirations voiced by these youth do reflect the prevailing division of the occupational ladder into higher status male jobs and lower status female positions, with considerable sex-typing of specific occupational ambitions.

Although women appear not to have escaped social expectations, black youth in the class of 1969 are quite similar to whites in their occupational goals. Given the unfortunate realities that existed ten years ago (and still exist today), these aspirations are more likely to be frustrated than are those of white youth in general. Of course, the difference here is but a matter of degree, for both blacks and whites appear to have substantially exaggerated goals.

Some sense of realistic appraisal does emerge from the mean differences in prestige aspirations of adolescents in academic and non-academic

Table 8.2.4 Occupational Status Aspirations in the Senior Year for GROUP4 - 1969 (3 Schools) and GROUP2 - 1965 (1 School)

VARIABLE COMPARISON		GROUP4				GROUP2			
		$\overline{X}$	SD	N	ETA^2	$\overline{X}$	SD	N	ETA^2
SEX									
	MALE	64.19	21.27	133	.020*	70.56	16.55	85	.175*
	FEMALE	59.05	14.78	243		56.74	13.23	147	
	TOTAL	60.87	17.50	376		61.81	15.96	232	
RACE									
	BLACK	61.11	15.72	139	.000	[a]			
	WHITE	60.84	18.30	235					
	TOTAL	60.94	17.36	374					
CURRICULUM 11th									
	ACADEMIC	64.80	16.81	175	.053*	64.73	15.25	154	.070*
	OTHER	56.57	17.81	136		55.70	15.38	69	
	TOTAL	61.20	17.71	311		61.94	15.82	223	
EDUCATIONAL PLANS 11th									
	COLLEGE	63.73	16.33	222	.045*	63.61	14.57	150	.039*
	OTHER	54.63	17.72	54		56.57	17.13	51	
	TOTAL	61.95	16.97	276		61.83	15.52	201	
EDUCATIONAL PLANS 12th									
	COLLEGE	63.74	16.33	279	.075*	67.42	12.98	138	.211*
	OTHER	51.85	19.23	72		52.21	15.97	74	
	TOTAL	61.30	17.61	351		62.11	15.83	212	

CORRELATIONS OF SEI AND TEST SCORES

		STEP VERBAL 11th	STEP MATH 11th	STEP TOTAL 11th	SCAT TOTAL 11th	SAT VERBAL 12th	SAT MATH 12th	N
GROUP4 - 1969								
	MALE	.394	.378	.394	.376	.472	.455	114-126
	FEMALE	.272	.288	.298	.220	.269	.272	200-226
	TOTAL	.320	.353	.353	.302	.360	.377	314-352
GROUP2 - 1965								
	MALE	.248	.270	.279	.317	.304	.227	80- 82
	FEMALE	.261	.352	.318	.289	.284	.307	140-142
	TOTAL	.190	.423	.318	.333	.315	.392	220-223

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[a] Only six of the Group 2 adolescents in this subsample were black youth.

high school curricula (Table 8.2.4). Students in non-college tracks have aspirations which average 8 to 10 prestige points below their peers in academic curricula. In the class of 1969 track is a more effective predictor of aspirations than is sex, although such is not the case in the earlier cohort.

A pattern similar to that evidenced for track placement emerges for differences in occupational aspiration according to youths' educational goals. In both the 1965 and 1969 cohorts, students who as juniors did not aspire to college voiced only modestly lower status vocational goals as seniors (7 and 9 points respectively) than did students who had presumed that they would go to college. When senior educational goals are used to classify youth, this difference widens somewhat, now ranging between 11 to 15 points. In the 1965 cohort, in fact, the prestige gap between college and non-college bound youth more than doubles across the junior and senior year classifications (from 7 to 15 points). It should not be surprising that senior year career aspirations are less closely tied to junior than to senior year educational plans. The latter should reflect more realistic assessments of the youths' college prospects and are the proximate referent for the measured career expressions.

Ability and achievement contribute consistently to status aspirations (Table 8.2.4) for only one subgroup of adolescents -- males in the class of 1969. Fourteen to 22 percent of the variance in the goals of these young men can be predicted from either achievement or ability scores. The most efficient such predictor for these youth is the verbal score on the Scholastic Aptitude Test administered in the twelfth grade. Females in this cohort, on the other hand, appear not to be influenced by their academic abilities or achievements when formulating occupational goals -- brighter women do not aspire to higher status jobs. As noted earlier, the prestige range of female goals is notably restricted relative to that of males (standard deviation of 15 versus 21). This lack of consideration of personal talent may be, however, as realistic on the part of women as is its consideration on the part of men -- women of moderate ability probably can obtain low level white collar, clerical positions which are of higher status than those, usually blue collar, jobs open to similarly capable men; and, conversely, women of high ability probably will be channeled into professional careers of lower status than is accorded the stereotypically masculine occupational positions available to their male counterparts.[5]

8.2.C. Type of Occupational Aspirations

Gottfredson (1976, Table A) presents information mapping the 1970 Census detailed occupational titles into Holland occupational types. The codes given are double-type classifications, with the occupational title receiving two Holland category designations indicating the types most characteristic and second-most characteristic for that occupational title. In applying Gottfredson's scheme to our aspirational data, we use only a single code categorization, classifying the census occupational title into the Holland type designated by the leading interest code. The small number of occupational titles aspired to by our adolescents and the small sample size made the expanded scheme less useful for our purposes than a more parsimonious set of categories, the six basic types.

The distribution of type of occupational aspiration for both the 1969 and 1965 senior classes is given in Table 8.2.5. Aspirations of females in both years overwhelmingly fall into the stereotypically feminine Social and Conventional types of occupations. Some Investigative and Artistic preference is indicated -- these choices being largely technician (Investigative) positions (with a small number of notable exceptions such as "psychologist") or journalism and modeling (Artistic). Males, in contrast, aspire to Realistic and Investigative pursuits. The former are mainly technical professional positions supplemented by skilled craft and police work; the latter involve technical professional positions and various scientific choices, such as "chemist," and "physician." The Enterprising category, third most popular, involves largely law and business management.

The fourth set of columns in Table 8.2.5 reports percentages of the employed male labor force aged 26-28 that fall into given types of occupations. It should be noted that the scheme employed by Gottfredson and Brown (1978), from which these data are taken, included designations of level (mainly a status distinction) as well as type of job. For example, 6.2 percent of the males were employed in high level Social jobs. The proportion employed in low or moderate (L,M) level Social positions is included in the "other" category of 10.3 percent of the young males.

By the age of 28, most youth who went through school without interruption would have completed the educational preparation required for job

Table 8.2.5 Distribution of Type of Occupational Aspiration by Sex and Race

Type of Occupational Aspiration		Class of 1969 Sex		Class of 1965 Sex		Class of 1969 Race		Gottfredson and Brown (1978) Percent of Males in Labor Force ages 26-28 in eacn Holland type[a]	
		M	F	M	F	M	F		level
%	R	25.6	1.2	16.5	.7	11.1	7.2	48.0	(L,M)
	(n)	(34)	(3)	(14)	(1)	(26)	(10)		
%	I	27.8	12.3	23.5	6.8	17.9	17.3	8.5	(H)
	(n)	(37)	(30)	(20)	(10)	(42)	(24)		
%	A	9.0	10.3	4.7	2.0	13.2	4.3	---	---
	(n)	(12)	(25)	(4)	(3)	(31)	(6)		
%	S	15.0	46.9	23.5	59.2	34.0	38.8	6.2	(H)
	(n)	(20)	(114)	(20)	(87)	(80)	(54)		
%	E	18.8	8.6	15.3	2.0	11.5	13.7	23.0	(M,H)
	(n)	(25)	(21)	(13)	(3)	(27)	(19)		
%	C	3.8	20.6	16.5	29.3	12.3	18.7	3.8	(M)
	(n)	(5)	(50)	(14)	(43)	(29)	(26)		
Column N		133	243	85	147	235	139	10.3	"OTHER"
Total N		376		232		374			

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[a] For level, L = low, M = medium, H = high with regard to job complexity.

entry. Gottfredson and Brown (1978) report that about 3 percent of the males aged 26-28 were "not in the labor force" (as opposed to unemployed); assuming that this entire group was in higher education would still not drastically change the percentages that might be expected to fall within high level Investigative, Social and Enterprising occupational types. Hence, using the Gottfredson-Brown distribution as a point of reference in evaluating our samples' aspirations seems reasonable, at least as a rough approximation.

The proportion of males aspiring to Investigative positions in our data far exceeds the proportion expected to be working in such occupations, and, if anything, our coding procedures probably underestimate the actual disparity ("teacher" and "college teacher" were coded "S," whereas further detail on subject matter preferences probably would have resulted in some additional "I" classifications). The proportion aspiring to Realistic jobs underestimates the proportion expected to be in such positions by almost exactly the amount of overrepresentation in the Investigative category. It would appear, then, that our adolescent males' occupational aspirations are as skewed and unlikely with regard to type distinctions as they are with regard both to status levels and to the distribution of occupational titles generally.

The sex differences in type of occupational aspirations slightly confound racial comparisons because a somewhat larger percentage of the black than the white youth are female. Nevertheless we can conclude that the black youth in our sample (see Table 8.2.5) are, compared with whites, equally or less likely to aspire to Investigative, Realistic and Artistic occupations and more likely to seek Social and Conventional work. Differences with regard to Enterprising jobs are quite small. This accords with earlier findings that black youth aspire to Social positions (Nafziger, et al., 1972) more frequently than to other types of work. It is interesting that over half (57.5 percent) of these black youth aspire to either Social or Conventional jobs, a pattern similar to that for women. Furthermore, their aspirations, with the exception of Realistic work, better approximate the actual employment patterns evidenced by blacks than the aspirations of whites approximate their labor market prospects. On the other hand, however, Realistic positions are the most numerous for blacks even though they are not especially aspired to (Gottfredson, 1977).

Curriculum track placement does moderately distinguish adolescents as to the type of job to which they aspire (Table 8.2.6). Non-college track students aspire to Realistic and Conventional jobs more often than do their academic track peers, and are less prone to choose Investigative, Social, and Enterprising jobs. These patterns parallel the differential importance of education in the acquisition of different types of employment (Gottfredson, 1977). College track students are most apt to choose Social jobs and thereafter Investigative ones. Non-college bound students are most likely to aspire to Social and Conventional types of work. Although this general pattern holds for both samples -- the class of 1965 and the class of 1969 -- specific inter-track comparisons do differ. For example, track differences are very distinct in the 1965 group and markedly less so in the later cohort.

In general, adolescents who do not plan to go to college are more likely than their peers who plan to attain higher education to aspire to

Table 8.2.6 Distribution of Type of Occupational Aspiration by Curriculum Placement and Educational Goals

	GROUP4 - Class of 1969						AEQGP2 - Class of 1965						Gottfredson (1977): % of full-time employed white men 26-65 with 16+ years of education in each type of work	
	CURRIC		EDEXJR		EDEXSR		CURRIC		EDEXJR		EDEXSR			
	ACAD	OTH	COL	OTH	COL	OTH	ACAD	OTH	COL	OTH	COL	OTH		
% R	6.3	13.2	5.0	20.4	6.8	19.4	5.8	5.8	2.7	11.8	3.6	12.2	10	(7.2)[a]
(n)	(11)	(18)	(11)	(11)	(19)	(14)	(9)	(4)	(4)	(6)	(5)	(9)		
% I	21.7	11.0	19.4	9.3	19.7	16.7	18.2	1.4	15.3	3.9	18.1	4.1	21	(26.1)
(n)	(38)	(15)	(43)	(5)	(55)	(12)	(28)	(1)	(23)	(2)	(25)	(3)		
% A	10.9	8.1	9.0	14.8	9.0	12.5	2.6	2.9	3.3	2.0	2.2	1.4	4	(4.3)
(n)	(19)	(11)	(20)	(8)	(25)	(9)	(4)	(2)	(5)	(1)	(3)	(1)		
% S	39.4	30.1	40.5	16.7	40.5	16.7	57.8	21.7	56.7	23.5	56.5	27.0	21	(27.5)
(n)	(69)	(41)	(90)	(9)	(113)	(12)	(89)	(15)	(85)	(12)	(78)	(20)		
% E	18.3	8.8	14.9	11.1	12.9	6.9	7.1	5.8	7.3	5.9	8.7	4.1	38	(15.9)
(n)	(32)	(12)	(33)	(6)	(36)	(5)	(11)	(4)	(11)	(3)	(12)	(3)		
% C	3.4	28.7	11.3	27.8	11.1	27.8	8.4	62.3	14.7	52.9	10.9	51.4	8	(18.8)
(n)	(6)	(39)	(25)	(15)	(31)	(20)	(13)	(43)	(22)	(27)	(15)	(38)		
Column N	175	136	222	54	279	72	154	69	150	51	138	74		
Total N	311		276		351		223		201		212			

---

[a] Percent of males planning to go to college who aspired to each type of work in the 1965 class (large proportion of C's due to popularity of "accountant").

Realistic and Conventional work and less likely to choose Social and Investigative pursuits (EDEXJR and EDEXSR, Table 8.2.6). These differences are more marked within subsamples and more consistent across subsamples (1965 and 1969) than the differences noted for track placement. The third panel in Table 8.2.6 presents the distribution across the six types of work of college-educated, white males aged 26-65 (who are employed full time). The percentages in parentheses in that panel are the proportions of the 1965 male seniors planning to go to college who aspired to each type of work. About a quarter of these males already know that they have been accepted by a college, and thus their college expectations are the most well founded of all the students represented in Table 8.2.6. Assuming that all of these youth complete four years of college, their aspirations as to type of occupation are fairly realistic. They do, however, severely underestimate the proportion of this select labor force employed in Enterprising work and overestimate participation in Conventional pursuits (largely due to the popularity of "accountant" as a career choice for these youth).

8.2.D. Occupational Aspirations and Pre-Occupational Interests

The data in Table 8.2.7 indicate that our measures of pre-occupational interests do not correlate at all highly with the status of the occupations to which adolescents aspire. For both males and females, only an occasional correlation is significantly different from zero at the .05 probability level. Although the pooled-sex associations are somewhat more

Table 8.2.7 Correlations of Occupational Status Aspirations and Eleventh Grade Pre-Occupational Interests

		GROUP4 1969			AEQGP2 1965		
Pre-Occupational Interest		M	F	T	M	F	T
REAL		-.125	.076	.067	.006	.106	.362*
	(n)	(106)	(207)	(313)	(81)	(142)	(223)
INVE		.126	.058	.119*	.023	.098	.171*
	(n)	(106)	(208)	(314)	(81)	(142)	(223)
ARTS		.163*	.066	.080	.007	.155*	-.053
	(n)	(106)	(207)	(313)	(81)	(142)	(223)
SOCL		-.064	.056	-.062	.056	-.010	-.261*
	(n)	(106)	(208)	(314)	(81)	(142)	(223)
ENTR		.100	.026	.028	.143	.101	.042
	(n)	(106)	(206)	(312)	(81)	(142)	(223)
CONV		-.164	-.027	-.151*	.128	-.099	-.342*
	(n)	(104)	(208)	(312)	(81)	(142)	(223)

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*Different from zero at $\alpha \leq .05$.

impressive, at least within the 1965 cohort, the correlations themselves are not always in the expected direction (the confounding of type and level of job may be problematic here -- even assuming that interests map perfectly onto the type of job aspired to, type and prestige do not directly correspond; e.g., Conventional jobs are lower in prestige, but so are Realistic jobs, and Social occupations are high in prestige relative to other types). It is likely that the significant correlations in the total sample are produced by sex variation on interest scales. Males score low on Conventional and Social interests and high on Realistic and Investigative interests and on status of aspiration. Thus, holding sex of the aspirant constant reveals that pre-occupational interests do not contribute much to our understanding of the formation of status aspirations for occupational position.

When occupational aspirations are classified by type rather than prestige (see Table 8.2.8) a similar picture emerges. We compared the mean score on a given eleventh grade pre-occupational interest scale for students who aspired as seniors to that particular occupational type with the mean interest score for those who aspired to any of the other five types. Thus, for example, in the 1969 cohort, students who said they aspired to a Realistic type occupation had an average eleventh grade Realistic interest scale score of 2.17; other students averaged 1.52 on Realistic pursuits. Viewed in this manner, type of aspiration predicts previous interest scores modestly well for both Realistic and Investigative types of occupations in both cohorts. Other differences are either inconsistent or absent. Sex differences in type of aspiration suggest again, however,

Table 8.2.8 Breakdown of Occupational Interests by Type of Aspiration

GROUP4 - 1969 GRADUATING CLASS

PARALLEL OCCUPATIONAL ASPIRATION - TYPE	PRE-OCCUPATIONAL INTEREST SCALE 11th GRADE REAL	INVE	ARTS	SOCL	ENTR	CONV
$\bar{X}$ Interest[a] for those having parallel Asps.	2.173 (29)	1.914 (54)	1.880 (32)	2.292 (108)	2.125 (44)	2.915 (47)
$\bar{X}$ Interest for those having other Asps.	1.524 (284)	1.402 (260)	1.625 (281)	2.169 (206)	2.198 (268)	2.517 (265)
ETA^2 type	.139*	.087*	.028*	.009	.001	.022

GROUP2 - 1965 GRADUATING CLASS

PARALLEL OCCUPATIONAL ASPIRATION - TYPE	PRE-OCCUPATIONAL INTEREST SCALE 11th GRADE REAL	INVE	ARTS	SOCL	ENTR	CONV
$\bar{X}$ Interest for those having parallel Asps.	2.200 (13)	1.763 (29)	1.583 (6)	2.330 (104)	2.300 (15)	2.473 (56)
$\bar{X}$ Interest for those having other Asps.	1.566 (210)	1.379 (194)	1.583 (217)	2.033 (119)	2.071 (208)	2.356 (167)
ETA^2 type	.084*	.061*	.000	.080*	.006	.003

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[a] All means can run from 1 to 4.

that once sex is controlled and interests are directly used to discriminate among types of aspirations, pre-occupational interests per se will be of minor importance.

FOOTNOTES

[1] These comments are more pertinent to the United States and its system rather than to such "sponsored" programs as that in Great Britain (Kerckhoff, 1974b; Turner, 1960).

[2] It should be remembered that about 27 percent of our sample resides in a state with an extensive state college and junior college system; the more optimistic educational goals of this subsample of youth would be warranted.

[3] Although the occupational aspirations of both boys and girls are limited to a small number of titles, this restriction of range may reflect a greater appreciation of the opportunities actually available in the case of women. For example, in 1973 more than two-fifths of all women workers were employed in ten occupations, and about three-fourths were employed in 57 occupations. Men's employment is far less concentrated (Women's Bureau, 1975).

[4] This pattern may not be at all general, however, for most other studies indicate that, overall, women's status aspirations are at least as high as men's (Debord, Griffin and Clark, 1976; Hout and Morgan, 1975; Howell and Frese, 1979; Rosen and Aneshensel, 1978; Sewell, Hauser and Wolf, 1977).

[5] There is some evidence, for example, that cognitive ability is more predictive of at least educational attainment among men than among women (Aledander and Eckland, 1974; Sewell and Shah, 1967); however, this does not appear to hold for work outcomes such as occupational status and earnings. On the other hand, educational level is much less predictive of

earnings for women and there is some evidence that women's relatively high status initial job placements do not provide opportunities for career advancement commensurate to that realized by men (Sewell, Hauser and Wolf, 1977).

Chapter 9 -- Work Among Adolescents

During the Exploratory and early Crystallization stages of the career decision-making process the adolescent or young adult engages in numerous activities which may, whether by design or not, provide a sense of how her interests and abilities fit into the world of work. At the very least, it typically is assumed that feedback from such experiences informs occupational decisions, regardless of whether these experiences were consciously undertaken as avenues for acquiring insight into career possibilities.

Measures of various work experiences and job knowledge during the junior and senior high school years are available. We will proceed chronologically through this information, looking first at the patterns of employment in junior and senior high school during school vacations and the regular school terms. Next, for those youth in the three-year post-high school follow-up sample who were employed, we will determine the routes through which their jobs were acquired. Through the use of retrospective reports of how much these youth knew about their present jobs while they were still in high school, we can make a rough determination of the adequacy of the occupational information acquired by high school students as well as characterize the job search strategies used by these youth. The actual experiences of these young adults at work will be examined in Chapters 10 and 11.

9.1 HIGH SCHOOL WORK EXPERIENCE

On the seventh, ninth, and eleventh grade "BEQ"'s respondents were asked whether during school vacations in the last two years they had usually had a job. Thus, the time period covered by the seventh grade reports is late elementary school. The summer after the tenth grade, the typical student would have passed his sixteenth birthday or at least have been old enough to legally enter the adult labor market with parental consent. Therefore, the range of jobs available to youth would widen considerably during the span covered by the three administrations. The data in Table 9.1.1 indicate that the proportion of students who report no work experience drops considerably during that four-year period. In the GROUP 4 cohort almost 60 percent of the adolescents have had some sort of direct occupational experience by their junior year in high school, although fewer than a third of these experiences had been in full-time positions. In contrast, the youth in the cohort of 1963 eleventh graders (GROUP 2) more closely resemble the 1965 ninth graders than the 1967 juniors. Over half of these students reported that they usually had not been employed. Part of the explanation for this apparent difference may lie in the fact, noted in Chapter 2, that these AEQ youth are urban dwellers whereas the GROUP 4 panel contains a large minority (25 percent) of youth living in distinctly rural communities. Although the jobs available in urban areas greatly exceed those in rural, competition for and accessibility to these jobs probably give a slight advantage to rural adolescents.[1] Possible explanations aside, however, these data

Table 9.1.1 Percentages of Youth in the GROUP 4 and AEQGP2 Samples Holding Part- and Full-Time Jobs During School Vacations Between the Fifth and Eleventh Grades

	GROUP4 PERCENT HOLDING VACATION JOB				GROUP2-AEQ PERCENT HOLDING VACATION JOB
	7th	9th	11th		11th
[a](1) % NO	62.7	51.0	39.5	[a](0) % NO	53.8
(n)	(2271)	(2571)	(2240)	(n)	(924)
(2) % Part	30.4	40.5	42.4	(1) % Part	37.4
(n)	(1100)	(2043)	(2406)	(n)	(642)
(3) % Full	7.0	8.4	18.1	(2) % Full	8.7
(n)	(252)	(425)	(1026)	(n)	(150)
N	(3623)	(5039)	(5672)	N	1716
Male $\overline{X}$	.582	.710	.990	Male $\overline{X}$	.766
Female $\overline{X}$	.318	.445	.590	Female $\overline{X}$	.398
Black $\overline{X}$	.588	.700	.837	Black $\overline{X}$	.702
White $\overline{X}$	.419	.547	.775	White $\overline{X}$	.531
ETA^2 S[b]	.045*	.042*	.075*	ETA^2 S	.077*
ETA^2 R[c]	.009*	.008*	.001*	ETA^2 R	.006*

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[a] Note difference across the two samples in coding of responses.

[b] ETA^2 for Sex differences.

[c] ETA^2 for Race differences.

*Different from zero at $\alpha \leq .05$.

suggest that 40 to 50 percent of youth enter their junior year in high school having gained no direct experience in the labor market. Furthermore, at all grade levels females have gained less experience than have males, with sex main effects explaining from about 4 to 8 percent of the variance in these reports. Although the differences are not as pronounced in the case of race, black youth were consistently more likely than were white youth to have worked during school vacations in junior and senior high school.

In the seventh and ninth grades, adolescents were about as likely to report that they did not hold jobs during the school term (Table 9.1.2) as they were to report no job experience during vacations (refer back to Table 9.1.1). In the eleventh grade, however, a noticeably smaller percentage of students had held jobs during the ninth and tenth grade terms than had worked during vacations in those years, with females being slightly less likely than males to have been employed. Nonetheless, about half of the eleventh graders had been involved in some job activity during at least one of the past two years. For at least a third of those employed, this activity continued for over six months[2] and entailed a commitment of more than five hours a week. Females were slightly less likely than males to work during school terms but no racial difference was evidenced. The pattern of job experience in the class of 1965 (see Table 9.1.3) is similar to that of the class of 1969. About 8 percent fewer students had any school year work experience but those who did tended to remain employed for at least six months. However, they did average somewhat fewer hours per week on the job than did the employed youth in the later cohort.

Table 9.1.2 Percentages of Youth Working During the School Years from the Fifth Grade through the Tenth Grade, GROUP 4[a]

GROUP4

	Outside School Work During Term		
	7th 1963	9th 1965	11th 1967
% No	59.3	60.5	53.2
(n)	(2149)	(3045)	(2953)
% 1 Yr.	11.3	11.4	15.6
(n)	(411)	(575)	(864)
% 2 Yr.	29.3	28.1	31.3
(n)	(1063)	(1417)	(1738)
N	(3623)	(5037)	(5555)
Male $\overline{X}$	.793	.809	.931
Female $\overline{X}$	.618	.552	.638
Black $\overline{X}$	.673	.644	.756
White $\overline{X}$	.705	.683	.786
ETA^2 S[b]	.010*	.021*	.027*
ETA^2 R[c]	.000	.000	.000

	Months Worked Outside School in Term		
	7th	9th	11th
% 2 Mo. or less	31.6	38.2	28.1
(n)	(456)	(884)	(800)
% 2-6 Mo.	28.4	26.3	26.3
(n)	(409)	(609)	(749)
% 6 Mo. or longer	40.0	35.5	45.5
(n)	(576)	(820)	(1295)
N	(1441)	(2313)	(2844)

	Hours Per Week Worked Outside School in Term		
	7th	9th	11th
% 5 Hr. or Less	67.6	59.7	39.9
(n)	(969)	(1337)	(1107)
% More than 5 Hr.	32.4	40.3	60.1
(n)	(465)	(901)	(1669)
N	(1434)	(2238)	(2776)

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[a] The 7th grade figure reports on the 2 previous years (5th and 6th), the 9th reports on the 7th and 8th; the eleventh figure covers grades 9 and 10.

[b] ETA^2 for Sex differences.

[c] ETA^2 for Race differences.

*Different from zero at $\alpha \leq .05$.

Table 9.1.3 Percentages of Youth Working During the the School Years from the Ninth through the Tenth Grades, AEQGP2[a]

AEQ-GP2

Outside School Work in Term - 11th 1963	
% No	61.1
(n)	(1048)
% 1 Year	12.5
(n)	(214)
% 2 Years	26.5
(n)	(454)
N	1716
Male $\overline{X}$	1.311
Female $\overline{X}$	.806
Black $\overline{X}$	.893
White $\overline{X}$	1.023
ETA^2 S^b	.035*
ETA^2 R^c	.001

Months Worked (11th) Outside School in Term	
% 2 Mo. or less	29.3
(n)	(193)
% 2-6 Months	22.5
(n)	(148)
% 6 Mo. or longer	48.3
(n)	(318)
N	659

Hours Worked (11th) Outside School in Term	
% 5 Hr. or less	52.6
(n)	(341)
% More than 5 Hr.	47.4
(n)	(307)
N	648

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[a] The eleventh grade figure reports on work activity during grades 9 and 10.

[b] ETA^2 for Sex differences.

[c] ETA^2 for Race differences.

[*] Different from zero at $\alpha \leq .05$.

Although a large proportion of senior high school students have little, if any, direct experience in the labor market, and thus few opportunities to assess their abilities and/or the relative importance to them of various returns to and routines of work, it also is true that over half have experienced the worker role prior to its being a full-time commitment. This does not mean, of course, that these youth actually use these experiences to assess their interests and strengths or apply the knowledge gained through work to their career speculations. Nevertheless, it is the case that most youth at least have the opportunity for such reality testing, if only to a very limited degree.[3]

9.2 PREVIOUS JOB INFORMATION CONCERNING ADULT ENTRY POSITION

All young adults in the AEQ sample who were gainfully employed outside of the home (from one hour to full-time per week) were asked to respond to the following question:

> "Please think back now to your senior year in high school and check below the one statement that best describes what you knew then about your present job and how you knew it. If more than one statement is true, check the one that states how you learned most about what your job would be like."

The options available to the respondent were:

1 = I didn't know jobs like mine existed.
2 = I knew there were jobs something like mine, but didn't really know what people did in them.
3 = I knew what jobs like mine were like because I had known people in them.
4 = I knew what jobs like mine were like because I had seen people working at them even though I didn't know the people.

5 = I knew what jobs like mine were like because I had been told about them by my parents, teachers, counselors, or someone else who should know, even though not working in the job.
6 = I knew what jobs like mine were like because I had worked in it, or in a job like it, before finishing high school.

Since it is doubtful that a few hours a week of employment can be considered to be an "entry-level position," all our analyses here are conducted on two samples -- all employed youth and youth employed at least 35 hours a week.

Tables 9.2.1 and 9.2.2 present the distribution of responses across the six options regarding previous job information. Most young adults were employed in jobs which were not entirely foreign to them three to four years earlier, although 25 to 30 percent of all employed youth and 29 to 37 percent of full-time workers were, as adolescents, totally unfamiliar with the routines of their present position (see rows 2). Relatively few (10 to 20 percent) of the youth had had direct high school work experience in a similar position. Observation was as likely to be a source of information as were secondary, informed persons.

If we collapse Tables 9.2.1 and 9.2.2 so that previous job knowledge is expressed as a trichotomy where responses (1) and (2) are grouped together under "ignorance" (IGN), (3) through (5) are considered "secondary information" (2ND), and response (6) is termed "direct experience" (DIR), it is easier to examine the nature of job information. Tables 9.2.3 and 9.2.4 present these breakdowns by sex, race, and sex-race subgroups (read percentages across the tables).

Six percent more females than males and 7 percent more blacks than whites in the total sample were employed in jobs which would have been

Table 9.2.1 Previous Job Knowledge While in High School, All Employed Youth*

	(1) WHITE	(2) BLACK	(3) MALE	(4) FEMALE	(5) M&F TOTAL	(6) B&W TOTAL
(1) Didn't know such jobs existed	6.1 (73)	11.2 (17)	6.1 (34)	6.6 (60)	6.4% (94)	6.7% (90)
(2) I knew job existed, but didn't know what people did in it	28.2 (336)	30.3 (46)	25.1 (139)	30.3 (275)	28.3% (414)	28.4% (382)
(3) I had known people in jobs like mine	15.8 (188)	14.5 (22)	16.6 (92)	15.7 (143)	16.1% (235)	15.6% (210)
(4) I had seen people working in jobs like mine	15.7 (187)	17.1 (26)	17.1 (95)	16.1 (146)	16.5% (241)	15.8% (213)
(5) I had been told about jobs like mine by counselors, teachers, etc.	16.5 (197)	17.8 (27)	13.2 (73)	18.0 (164)	16.2% (237)	16.7% (224)
(6) I had worked in a job like mine before finishing high school	17.7 (211)	9.2 (14)	21.8 (121)	13.3 (121)	16.5% (242)	16.7% (225)
Column Total N	1192	152	554	909	1463	1344
	88.7%	11.3%	37.9%	62.1%		

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*Persons who worked less than 5 hours a week (but did have a paying job) were not directed to skip this question; they were, however, requested to skip the question regarding the route to their present job. A total of 695 persons said they worked less than 5 hours a week; 259 persons, therefore, might be assumed to be working in a job outside the home that occupies less than 5 hours a week (1463 - 1204); these numbers are only estimates -- legitimate skips cannot be distinguished totally from missing data.

Table 9.2.2 Previous Job Knowledge While in High School for Full-Time Workers, 35 or More Hours per Week

	(1) WHITE	(2) BLACK	(3) MALE	(4) FEMALE	(5) M&F TOTAL	(6) B&W TOTAL
(1) Didn't know such jobs existed	6.6 (45)	11.7 (13)	5.9 (19)	7.4 (41)	6.9% (60)	7.3% (58)
(2) I knew job existed, but didn't know what people did in it	33.8 (231)	34.2 (38)	28.6 (92)	36.7 (202)	33.7% (294)	33.9% (269)
(3) I had known people in jobs like mine	14.6 (100)	12.6 (14)	17.7 (57)	13.4 (74)	15.0% (131)	14.4% (114)
(4) I had seen people working in jobs like mine	13.0 (89)	14.4 (16)	14.9 (48)	13.1 (72)	13.7% (120)	13.2% (105)
(5) I had been told about jobs like mine by counselors, teachers, etc.	15.8 (108)	18.9 (21)	12.1 (39)	18.3 (101)	16.0% (140)	16.2% (129)
(6) I had worked in a job like mine before finishing high school	16.1 (110)	8.1 (9)	20.8 (67)	11.1 (61)	14.7% (128)	15.0% (119)
Column Total N	683	111	322	551	873	794
	86.0%	14.0%	36.9%	63.1%		

Table 9.2.3 Previous Job Knowledge While in High School -- Extent of Information for All Employed Youth

	Previous Job Knowledge[a]			
	IGN	2ND	DIR	N TOTAL
WHITES	34.3%	48.0%	17.7%	1192
BLACKS	41.5%	49.3%	9.2%	152
MALES	31.2%	46.9%	21.8%	554
FEMALES	36.9%	49.8%	13.3%	909
WHITE MALES	30.0%	46.3%	23.7%	464
WHITE FEMALES	37.1%	49.0%	13.9%	728
BLACK MALES	48.8%	44.2%	7.0%	43
BLACK FEMALES	38.5%	51.4%	10.1%	109
TOTAL SAMPLE (M&F)	34.7%	48.7%	16.5%	1463[b]
TOTAL SAMPLE (B&W)	35.1%	48.1%	16.7%	1344[b]

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[a] See text for category descriptions.

[b] These totals differ because of missing data on race.

Table 9.2.4 Previous Job Knowledge While In High School -- Extent of Information for Full-Time Workers, 35 or More Hours per Week

	Previous Job Knowledge[a]			
	IGN	2ND	DIR	N TOTAL
WHITES	40.4%	43.5%	16.1%	683
BLACKS	45.9%	45.9%	8.1%	111
MALES	34.5%	44.7%	20.8%	322
FEMALES	44.1%	44.8%	11.1%	551
WHITE MALES	32.4%	43.8%	23.8%	256
WHITE FEMALES	45.2%	43.3%	11.5%	427
BLACK MALES	52.8%	41.7%	5.6%	36
BLACK FEMALES	42.7%	48.0%	9.3%	75
TOTAL SAMPLE (M&F)	40.5%	44.8%	14.7%	873[b]
TOTAL SAMPLE (B&W)	41.2%	43.8%	15.0%	794[b]

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[a] See text for category descriptions

[b] These totals differ because of missing data on race.

virtually unknown to them in high school; among full-time workers the corresponding figures are 10 and 5.5 percent, respectively. Among males of both groups the race differential is even more pronounced, with almost 20 percent more black males than white males being so employed. White males of both groups are again advantaged with respect to the transfer of work experience -- 24 percent of these youth had worked in a job similar to their present one while in high school, whereas only 12 to 14 percent of white females, about 10 percent of black females, and 6 to 7 percent of black males were able to capitalize so on their previous job histories.[4] Almost half of these young adults (41 to 51 percent) had some previous second-hand exposure to the work routines of their present positions, with full-time workers being, as a group, slightly less knowledgeable. Conversely, however, about 35 percent (30 to 53 percent) would have been ignorant if questioned three years earlier about the content of their current jobs. Viewed in this light, the store of occupational information obtained during high school, particularly concerning lower level entry positions, seems extraordinarily sketchy.

The data presented in Tables 9.2.5 and 9.2.6 do not oblige us to modify this conclusion. Three indicators of career planning behavior are used to predict retrospective knowledge of job routines. Among all employed youth (Table 9.2.5) planners and non-planners are almost indistinguishable -- i.e., students who report giving serious consideration to the process of occupational choice are equally as likely as non-planners to find themselves, three to four years later, in a job about which earlier they had been ignorant. Small percentage differences (from 1 to 5 percent) are not extremely

Table 9.2.5 Information about Present Job by Planning Activities[a], All Employed Youth

Job Information[b]	OCC THOT-11 NO	OCC THOT-11 YES	ED/OCC FUTR-11 Rarely-Occas.	ED/OCC FUTR-11 Freq.	OCC THOT-12 NO	OCC THOT-12 YES
IGN	36.6% (86)	35.7% (313)	36.8% (145)	35.4% (254)	33.7% (58)	36.3% (353)
2ND	46.0% (108)	49.1% (431)	50.8% (200)	47.2% (339)	48.3% (83)	47.1% (458)
DIR	17.4% (41)	15.2% (133)	12.4% (49)	17.4% (125)	18.0% (31)	16.6% (161)
Column N	235	877	394	71[illegible]	172	972
Column %	21.1	78.9	35.4	64.6	15.0	85.0
N	1112		1112		1144	

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[a] OCC THOT11 (Junior year): During the last two years, have you seriously considered any occupation(s) for your life work?
ED/OCC FUTR11 (Junior year): During the last two years, how often have you thought about your educational and vocational plans after high school?
OCC THOT12 (Senior year): During the last two years, have you seriously considered any occupation(s) for your life work?

[b] See text for classification descriptions.

Table 9.2.6 Information about Present Job by Planning Activities[a] for Full-Time Workers, 35 or More Hours a Week

	OCC THOT-11		ED/OCC FUTR-11		OCC THOT-12	
Job Information[b]	NO	YES	Rarely-Occas.	Freq.	NO	YES
IGN	46.3% (63)	42.0% (205)	44.0% (109)	42.3% (159)	36.8% (39)	43.6% (244)
2ND	36.8% (50)	44.7% (218)	46.0% (114)	41.0% (154)	47.2% (50)	41.2% (231)
DIR	16.9% (23)	13.3% (65)	10.1% (25)	16.8% (63)	16.0% (17)	15.2% (85)
Column N	136	488	248	376	106	560
Column %	21.8	78.2	39.7	60.3	15.9	84.1
N	624		624		666	

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[a] OCC THOT11 (Junior year): During the last two years, have you seriously considered any occupation(s) for your life work?
ED/OCC FUTR11 (Junior year): During the last two years, how often have you thought about your educational and vocational plans after high school?
OCC THOT12 (Senior year): During the last two years, have you seriously considered any occupation(s) for your life work?

[b] See text for classification descriptions.

impressive in this instance. If career planning as undertaken by adolescents were at all effective much larger differences should be observed. Among full-time workers (Table 9.2.6) the data are no more impressive; indeed it appears that some benefits, at least as far as job information is concerned, accrue to persons who do not think about their futures.

We next consider how family status and high school track placement condition such familiarity (or lack of it) with later work experiences. Youth whose parents have at least some college education (see Tables 9.2.7 and 9.2.8) are consistently more likely to have had at least second-hand if not also direct information concerning their present job while they were still in high school. Their greater knowledge of work routines results about equally from direct work experience and increased communication. Likewise, youth who were in academic curricula in high school (see Tables 9.2.9 and 9.2.10) are more likely to report that they had knowledge concerning their present job while still in secondary school (although among full-time workers, previous academic and general track students were equally ignorant concerning their present job). This knowledge was accumulated largely from second-hand sources rather than through direct exposure to work routines as an employee. Interestingly, the youth in both groups who had been business and vocational students were the least likely to report having had any prior knowledge of the content of their present jobs. Since such curricula are generally intended to prepare non-college bound youth for entry into the labor market following high school graduation, the fact that over 40 percent of these youth were located haphazardly in the occupational world does not speak well for the effectiveness with which these responsibilities are discharged.

Table 9.2.7 Information about Present Job by Parental Education, for All Employed Youth

Job Information[a]	Father's Education H.S. or less	Father's Education More Than H.S.	Mother's Education H.S. or less	Mother's Education More Than H.S.
IGN	38.8% (222)	29.4% (121)	39.6% (270)	26.5% (87)
2ND	47.2% (270)	52.2% (215)	46.0% (313)	54.3% (178)
DIR	14.0% (80)	18.4% (76)	14.4% (98)	19.2% (63)
Column N	572	412	681	328
Column %	58.1	41.9	67.5	32.5
N	984		1009	

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[a] See text for classification descriptions.

Table 9.2.8 Information about Present Job by Parental Education fo Full-Time Workers, 35 or More Hours per Week

	Father's Education		Mother's Education	
Job Information[a]	H.S. or less	More Than H.S.	H.S. or less	More Than H.S.
IGN	46.2% (163)	33.1% (60)	46.7% (198)	29.5% (39)
2ND	41.9% (148)	48.1% (87)	40.3% (171)	50.8% (67)
DIR	11.9% (42)	18.8% (34)	13.0% (55)	19.7% (26)
Column N	353	181	424	132
Column %	66.1	33.9	76.3	23.7
N	534		556	

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[a] See text for classification descriptions.

Table 9.2.9 Information about Present Job by Curriculum in the Junior Year,[a] for All Employed Youth

Job Information[b]	Curriculum ACAD	Curriculum GEN	Curriculum BUS & OTHER	Curriculum ACAD	Curriculum OTHER
IGN	32.2% (212)	35.5% (50)	43.8% (137)	32.2% (212)	41.2% (187)
2ND	51.5% (339)	48.9% (69)	41.9% (131)	51.5% (339)	44.1% (200)
DIR	16.3% (107)	15.6% (22)	14.4% (45)	16.3% (107)	14.8% (67)
Column N	658	141	313	658	454
Column %	59.2	12.7	28.1	59.2	40.8
N		1112		1112	

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[a] ACAD = academic; GEN = general; BUS = Business.

[b] See text for classification descriptions.

Table 9.2.10 Information about Present Job by Curriculum in the Junior Year[a] for Full-Time Workers, 35 or More Hours a Week

	Curriculum			Curriculum	
Job Information[b]	ACAD	GEN	BUS & OTHER	ACAD	OTHER
IGN	40.2% (111)	40.0% (42)	47.3% (115)	40.2% (111)	45.1% (157)
2ND	44.6% (123)	45.7% (48)	39.9% (97)	44.6% (123)	41.7% (145)
DIR	15.2% (42)	14.3% (15)	12.8% (31)	15.2% (42)	13.2% (46)
Column N	276	105	243	276	348
Column %	44.2	16.8	38.9	44.2	55.8
N		624		624	

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[a] ACAD = academic; GEN = general; BUS = Business.

[b] See text for classification descriptions.

Females, blacks, students whose parents did not attend college, and students enrolled in non-academic curricula are, relative to their more advantaged counterparts, more likely to terminate their education at high school graduation and enter, or attempt to enter, the labor market as part-time or full-time workers. These are precisely the individuals who most need adequate job knowledge and information about career options while they are high school students. They simply cannot afford the luxury of postponing decisions about their occupational futures for another two to four years. However, irrespective of any planning or forethought that goes into the location of a first job, these people are most likely to find themselves three years later in work routines which were unknown to them in high school. The argument could be advanced that, having explored the world of work, the career options for these youth expanded tremendously and they were able to discover previously unknown opportunities for employment. Although we think this scenario quite unlikely, even if true, it hardly makes the paucity of career information available to terminal high school graduates a less serious concern. The simple fact remains that some 30 to 50 percent of these young adults find themselves engaged in employment routines with which they had been completely unfamiliar. It is difficult to imagine how such a circumstance could be taken to imply effective career planning and choice. If planning in and of itself is beneficial, as many vocational counsellors suggest, and if planning can only be effective when conducted from an adequate knowledge base, then these data support the contention that effective career planning is lacking for many adolescents.

Finally, we also examined whether manifest interest patterns have any relevance for youths' information regarding their eventual employment. A series of discriminant analyses were performed to see whether the manifest interest measures, both separately and in combination with background characteristics, would prove useful in distinguishing information levels and sources. They had no predictive power in this regard. These analyses are not summarized in table form.

9.3 THE ROUTE TO EMPLOYMENT

Granovetter (1974), Parnes (1954), and Reynolds (1951), among others, suggest that most persons obtain their initial job placement through informal contacts (e.g., friends or relatives) rather than through public or private employment agencies or more systematic search strategies. All members of the AEQ sample who were employed five or more hours per week were asked to report how they got their present jobs. Since it might be expected that job search strategies would vary depending upon the extent of employment sought, analyses are again conducted separately for all workers and full-time workers. The options available to the respondents are listed in Tables 9.3.1 and 9.3.2. About a quarter of both groups (see columns 5) obtained their present positions through informal, interpersonal channels. About 10 percent were placed through educational institutions, 20 percent (25 percent of full-time workers) used an employment agency, and 40 percent -- the modal response -- of each group applied directly to an employer. On face value, then, our data do not support the above conclusions.

Table 9.3.1 Route to Present Job for All Employed Youth

	(1) White	(2) Black	(3) Male	(4) Female	(5) M&F Total	(6) B&W Total
(1) Through a friend or relative	22.5% (218)	16.9% (22)	28.1% (128)	19.4% (145)	22.7% (273)	21.9% (240)
(2) Through someone I knew on a previous job	2.8% (27)	1.5% (2)	2.9% (13)	2.5% (19)	2.7% (32)	2.6% (29)
(3) Through high school	3.1% (30)	1.5% (2)	2.4% (11)	2.9% (22)	2.7% (33)	2.9% (32)
(4) Through another school	6.9% (67)	12.3% (16)	5.1% (23)	9.1% (68)	7.6% (91)	7.6% (83)
(5) Through...public employment agency	9.8% (95)	26.9% (35)	10.8% (49)	12.6% (94)	11.9% (143)	11.8% (130)
(6) Through a private employment agency	8.4% (81)	6.9% (9)	3.1% (14)	11.3% (85)	8.2% (99)	8.2% (90)
(7) By answering an advertisement	5.0% (48)	1.5% (2)	4.8% (22)	4.1% (31)	4.4% (53)	4.6% (50)
(8) By applying directly [to prospective employer]	41.5% (402)	32.3% (42)	42.9% (195)	38.1% (285)	39.9% (480)	40.4% (444)
Column Total N	968	130	455	749	1204[a]	1098[a]
	88.2%	11.8%	37.8%	62.2%		

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[a] Black and white (white and oriental) total 1098; other persons (1204-1098) had missing data on race.

Table 9.3.2 Route to Present Job for
Full-Time Workers, 35 or More Hours per Week

	(1) White	(2) Black	(3) Male	(4) Female	(5) M&F Total	(6) B&W Total
(1) Through a friend or relative	19.1% (136)	15.1% (16)	24.1% (79)	16.1% (92)	19.0% (171)	18.6% (152)
(2) Through someone I knew on a previous job	2.7% (19)	9.5% (2)	2.7% (9)	2.6% (15)	2.7% (24)	2.6% (21)
(3) Through high school	3.7% (26)	1.9% (2)	2.7% (9)	3.5% (20)	3.2% (29)	3.4% (28)
(4) Through another school	5.5% (39)	6.6% (7)	3.4% (11)	7.0% (40)	5.7% (51)	5.6% (46)
(5) Through...public employment agency	11.9% (85)	31.1% (33)	13.1% (43)	15.3% (87)	14.5% (130)	14.4% (118)
(6) Through a private employment agency	10.8% (77)	6.6% (7)	4.0% (13)	14.0% (80)	10.4% (93)	10.3% (84)
(7) By answering an advertisement	5.2% (37)	1.9% (2)	5.5% (18)	4.0% (23)	4.6% (41)	4.8% (39)
(8) By applying directly [to prospective employer]	41.2% (293)	34.9% (37)	40.7% (146)	37.4% (213)	40.0% (359)	40.3% (330)
Column Total N	712	106	328	570	898[a]	818[a]
	87.0%	13.0%	36.5%	63.5%		

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[a] Black and white (white and oriental) total 818; other persons (898-818) had missing data on race.

The final category, direct application, is, however, perhaps misleading. We have no way of knowing, given our data, whether (1) the individual applied to employers, acting on the basis of established occupational preferences (as might be expected for students who got their jobs through schools or persons who used an employment agency to screen jobs to match their interests and abilities); (2) the individual applied to any employers who might have job openings, without regard to or lack thereof in a particular job; or (3) the youth simply was told by friends or relatives that a particular company was hiring. The last possibility probably should be considered an "interpersonal" rather than an official channel, and we have no way of knowing its frequency. Almost certainly, then, our figures underestimate the importance of personal contacts in occupational placement.

Before turning to race or sex differences in routes to employment, we give brief consideration to the relation of job search behavior to three central variables -- planning activity, parental education (background), and curriculum placement. We have collapsed the search behaviors into three categories to simplify the examination: personal intermediary (PER INT; 1-2); formal intermediary (FOR INT: 3-7); direct application (DIRECT, 8).

Among both all and full-time workers, persons who reported in the eleventh grade that they had not (in the last two years) seriously considered any occupation(s) for their life's work (see Tables 9.3.3 and 9.3.4, "OCCTHOT11") were most likely to have obtained their present positions through direct application to an employer (OCCTHOT11, NO, 44 to 45

Table 9.3.3 Route to Present Job by Planning Activities[a] for All Employed Youth

	OCC THOT-11[c]		ED/OCC FUTR-11[d]		OCC THOT-12[e]	
ROUTE TO PRESENT JOB[b]	NO	YES	Never to Occas.	Freq.	NO	YES
PER - INT	27.9% (55)	24.1% (166)	26.1% (86)	24.3% (135)	27.3% (42)	23.9% (188)
FOR - INT	27.9% (55)	36.9% (254)	32.1% (106)	36.5% (203)	29.9% (46)	35.5% (279)
DIRECT	44.2% (87)	39.0% (269)	41.8% (138)	39.2% (218)	42.9% (66)	40.6% (319)
Column N	197	689	330	556	154	786
Column %	22.2%	77.8%	37.2%	62.8%	16.4%	83.6%
N	886		886		940	

[a,c,d,e] See Tables 7.2.1 and 7.2.3 for a description of the planning indicators.

[b] See text for description of the collapsed route categories.

Table 9.3.4 Route to Present Job by Planning Activities[a]
for Full-Time Workers, 35 or More Hours per Week

	OCC THOT-11[c]		ED/OCC FUTR-11[d]		OCC THOT-12[e]	
ROUTE TO PRESENT JOB[b]	NO	YES	Never to Occas.	Freq.	NO	YES
PER - INT	24.3% (35)	20.1% (100)	21.6% (55)	20.7% (80)	25.9% (29)	20.7% (119)
FOR - INT	30.6% (44)	40.8% (203)	35.3% (90)	40.7% (157)	32.1% (36)	39.8% (229)
DIRECT	45.1% (65)	39.0% (194)	43.1% (110)	38.6% (149)	42.0% (47)	39.6% (228)
Column N	144	497	255	386	112	576
Column %	22.5%	77.5%	39.8%	60.2%	16.3%	83.7%
N	641		641		688	

[a,c,d,e] See Tables 7.2.1 and 7.2.3 for a description of the planning indicators.

[b] See text for description of the collapsed route categories.

percent) and were more likely to have used this channel than were youth who had given consideration to their occupational futures. The same pattern holds for the other two types of planning activity: eleventh graders who had never or only occasionally thought about their educational or vocational futures during grades nine and ten (ED/OCC FUTR-11) and those who had not seriously considered during grades ten and eleven any occupation(s) for their life's work (OCCTHOT12), were somewhat more likely than were other, planning youth to have secured their present positions directly. While it would be difficult to say what motivated such applications, it nevertheless seems unlikely that such persons were setting out to pursue some well developed occupational goals and career plans. Although differences are not always large, there is the suggestion in these data, particularly among full-time workers, that persons who engaged in some form of planning during grades nine to eleven more often make use of formal job search channels than do other youth, and rely less often on either personal contacts or direct application. This, then, does conform somewhat to the pattern anticipated in rational models of career-development and decision-making.

Youth in both groups whose parents had a high school education or less (Tables 9.3.5 and 9.3.6) were likely to employ formal and direct job routes equally often. Students from more advantaged backgrounds were much more prone to use the direct approach rather than any other route to secure employment, although over half of these persons still used either formal or interpersonal channels in job seeking. Curriculum placement (see Tables 9.3.7 and 9.3.8) operates similarly to parental education. Students enrolled

Table 9.3.5 Route to Present Job by Parental Education for All Employed Youth

	Father's Education		Mother's Education	
Route to Present Job[a]	H.S. or less	More Than H.S.	H.S. or less	More Than H.S.
PER - INT	25.2% (115)	25.4% (82)	24.4% (136)	27.0% (65)
FOR - INT	36.6% (167)	30.7% (99)	37.5% (209)	28.2% (68)
DIRECT	38.2% (174)	44.0% (142)	38.2% (213)	44.8% (108)
Column N	456	323	558	241
Column %	58.5%	41.5%	69.8%	30.2%
N	779		799	

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[a] See text for a description of the collapsed route categories.

Table 9.3.6 Route to Present Job by Parental Education for Full-Time Workers, 35 or More Hours a Week

Route to Present Job[a]	Father's Education H.S. or less	Father's Education More Than H.S.	Mother's Education H.S. or less	Mother's Education More Than H.S.
PER - INT	22.2% (80)	20.5% (39)	21.6% (95)	20.9% (28)
FOR - INT	39.2% (141)	36.3% (69)	40.2% (177)	32.1% (43)
DIRECT	38.6% (139)	43.2% (82)	38.2% (168)	47.0% (63)
Column n	360	190	440	134
Column %	65.4%	34.5%	76.7%	23.3%
N	550		574	

---

[a] See text for a description of the collapsed route categories.

Table 9.3.7 Route to Present Job by Curriculum in 11th Grade for All Employed Youth

	Curriculum[b]			Curriculum	
Route to Present Job[a]	ACAD	GEN	BUS & OTHER	ACAD	OTHER
PER - INT	26.1% (127)	33.3% (41)	19.1% (53)	26.1% (127)	23.5% (94)
FOR - INT	29.0% (141)	31.7% (39)	46.6% (129)	29.0% (141)	42.0% (168)
DIRECT	44.9% (218)	35.0% (43)	34.3% (95)	44.9% (218)	34.5% (138)
Column n	486	123	277	486	400
Column %	54.9%	13.9%	31.3%	54.9%	45.1%
N		886			

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[a] See text for description of the collapsed route categories.

[b] ACAD = academic; GEN = general; BUS = business.

Table 9.3.8 Route to Present Job by Curriculum in 11th Grade for Full-Time Workers, 35 or More Hours per Week

	Curriculum[b]			Curriculum	
Route to Present Job[a]	ACAD	GEN	BUS & OTHER	ACAD	OTHER
PER - INT	20.9% (59)	29.4% (32)	17.6% (44)	20.9% (59)	21.2% (76)
FOR - INT	33.3% (94)	32.1% (35)	47.2% (118)	33.3% (94)	42.6% (153)
DIRECT	45.7% (129)	38.5% (42)	35.2% (88)	45.7% (129)	36.2% (130)
Column n	282	109	250	282	359
Column %	44.0%	17.0%	39.0%	44.0%	56.0%
N		641			

---

[a] See text for description of the collapsed route categories.

[b] ACAD = academic; GEN = general; BUS = business.

in an academic track were the most likely of all youth to directly seek out work and were prone to rely on this route the most. Members of other tracks as a whole were consistently more likely to rely on formal rather than direct channels; however, general track students evidenced a slight preference for direct application whereas business and vocational youth relied more upon formal intermediaries in seeking work.

In the instances of curriculum and parental education, students with greater resources -- advantaged in either track or social background -- were more likely to directly approach prospective employers rather than to use an intermediary of any type. On first examination, the case appears to be reversed with reference to planning activities. One might assume that plans constitute a resource which might be translated into direct action. However, planners were less likely to use such search strategies and more likely to use formal channels than were non-planners. Although we have not yet examined this possibility, it may be that persons who had not thought about their occupational futures (OCCTHOT11, OCCTHOT12) were those with the greatest resources, in that they were planning to enter college rather than the labor force and thus did not have to face immediately the reality of occupational choice. Their jobs, as well as those of students advantaged on other dimensions, might therefore be part-time holding positions rather than entry-level jobs beginning a career (see below).

If these speculations are correct, we might assume that other resources should operate similarly: persons with greater social resources, or social power, feel less need to draw upon intermediary sources of support in order to secure a job. They are more likely to directly approach a prospective employer than to work through personal contacts or formal channels. Two important social resources, particularly in the late 1960's, were the ascribed characteristics of race and sex. If we view maleness and whiteness as being more highly valued in this context than femaleness and blackness, we would predict that white males would most often use direct channels, exploiting employers' preferences, while black females would rely most on formal intervention, seeking appraisal on more universalistic criteria. White females and black males might be expected to behave similarly, relying on direct and formal channels about equally. Such is the pattern documented in Tables 9.3.9 and 9.3.10, although the relative "power" positions of white females and black males appear to vary across the two groups of youth, with whiteness assisting in part-time employment and maleness doing so for full-time work.

Finally, we also have examined, but do not report, the influence of manifest interests upon routes to employment within a discriminant analysis framework. As was found to be the case earlier with regard to levels of occupational information, adolescent activity patterns appear to have no bearing upon this aspect of career development. In view of such non-findings, we have decided not to burden an already unwieldly report with these unnecessary and uninformative tables.

Table 9.3.9 POWER (SEX & RACE Resources) for All Employed Youth

Route to Present Job[a]	WM	WF	BM	BF
		smaller →		
PERS - INT	30.7 (115)	21.9 (130)	20.5 (8)	17.6 (16)
		← smaller		
FORM - INT	24.8 (93)	38.4 (228)	38.5 (15)	53.8 (49)
		smaller →		
DIRECT	44.5 (167)	39.6 (235)	41.0 (16)	28.6 (26)
Column N	375	593	39	91
% Total	34.2	54.0	3.6	8.3

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[a] See text for category descriptions, n = 1098.

Table 9.3.10 POWER (SEX & RACE Resources) for Full-Time Workers, 35 or More Hours per Week

Route to Present Job[a]	WM	WF	BM	BF
	smaller →			
PERS-INT	26.7 (70)	18.9 (85)	17.1 (6)	16.9 (12)
	← smaller			
FORM-INT	27.5 (72)	42.7 (192)	37.1 (13)	53.5 (38)
	smaller →			
DIRECT	45.8 (120)	38.4 (173)	45.7 (16)	29.6 (21)
Column N	262	450	35	71
% Total	32.0	55.0	4.3	8.7

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[a] See text for category descriptions, N = 818.

FOOTNOTES

[1] It should also be remembered, from Chapter 3, that all 1963 data were coded such that missing data are indistinguishable from valid "0" or low score responses. Thus the proportion of "NO's" that is attributable to blank responses is unknown.

[2] Again, coding inadequacies (1) failed to distinguish between persons who skipped these "duration of employment" items because they were not employed and other nonrespondents, and (2) confounded blanks with low codes in the 1963 data (grade seven GROUP4, eleventh AEQ). We attempt to control for the former, but discrepancies in case bases still exist.

[3] Not knowing the actual substance of their work, it is difficult to assess the relevance of these early work experiences to their later worker/career options.

[4] It should be noted, however, that holding a job three years after high school graduation that is similar to one held in high school may not be an advantage in and of itself with regard to career progression.

Chapter 10 -- Determinants of the Work Routines of Young Adults

In this and the following chapter we shift attention from career planning and preparation during the primary and secondary grades to youths' actual work experience shortly after high school graduation. For many youth this will represent the beginning of a career line, while for others it will be another facet of vocational exploration, parallel in many respects to school-based career preparation experiences, but located in the labor-market proper. Whether career-initiation or vocational exploration, these early work experiences will likely be of considerable consequence for later career development and occupational attainments (Blau and Duncan, 1967; Ornstein, 1976).

We focus on two facets of early work experience, the nature of the work itself as revealed through the activities or routines it involves and the rewards or gratifications it confers. Six dimensions of work routines are distinguished which correspond to the six dimensions of personality and work environment proposed by Holland (1973). Six dimensions of job rewards also are considered, these having been derived empirically from the clustering of respondents' expressed satisfaction with various aspects of their employment.

The present chapter examines the activity dimensions of work experience, and particularly the extent to which the task and activity structure of youths' employment can be anticipated from school-based career preparation and career development influences. We will be especially interested in whether activity preferences during adolescence (i.e., manifest interests) serve at all to channel youth into conceptually parallel work routines. Chapter 11 pursues two concerns: first, how adolescent career development affects returns to work; second, an issue in occupational organization itself, the relationships between work routines and work rewards. It will be of considerable interest in this last regard to identify the extent to which differences in rewards from work derive from differences in the kinds of work being performed, as opposed to differences in worker resources within functionally equivalent jobs.

Chapters 10 and 11, then, study the "routines" and "rewards" aspects of youths' employment experiences during the early postsecondary years. To come full-circle with regard to the multi-dimensional conceptualization of occupations and careers borrowed earlier from Wise, Charner and Randour (1976), the school-based career development predictors of these occupational outcomes might reasonably be interpreted as reflecting the "requisites" of occupational access. In combination, then, these analyses will offer an overview of the "routines" - "rewards" - "requisites" constellations prevalant in the employment situations characteristic of early work/career histories.

10.1 PRE-OCCUPATIONAL INTERESTS AND WORK ROUTINES

In this section we investigate the extent to which work activities during the post-high school transitional years are influenced by adolescents' manifest interests, that is, are the kinds of functions performed at work at all anticipated by youths' leisure pursuits? Data on work routines are available for AEQ respondents who are employed at least 20 hours a week (N=1167, listwise).[1] The scales used for this analysis were described previously in Chapter 5. Other variables used are race, sex, parental status, ability and achievement test performance, curriculum track in high school, the number of hours worked per week and school enrollment status. Finally, we also control for secondary school effects by using dummy variables to represent the seven schools included in the follow-up sample (see Chapter 2). In the discussion that follows we concentrate on the role of interests rather than of the various controls, reserving comment on the more general processes contributing to access to particular work routines until section 2.

Persons who worked at least 20 hours a week were asked to indicate how often they had engaged in each of 60 separate work routines on the job during the last two weeks (see Chapter 5). These were clustered into six dimensions reflecting the Holland RIASEC classification of occupational types. The frequencies of participation in the activities comprising a scale were summed into "continuous work activity" scores. The use of all six scores allows us to classify each person's position according to the degree to which each of the RIASEC dimensions is represented in it. Persons, then, who scored very high on the Realistic activities scale and quite low on all others would be engaged in occupations clearly differentiated by type. Less distinct patterns across the six scales would indicate, obviously, less differentiation in types of activities.

Our working assumption is, of course, that youth seek out occupations in which the routines of the job are consistent with their previously formulated manifest interest patterns. Thus, one would expect that persons who scored very high on Social interests as adolescents would seek out Social routines rather than, say, Realistic ones; high Realistic and Investigative scorers would seek those types of activities; and Artistically inclined persons would attempt to locate work positions in which the job activities allowed them some expression of their pre-occupational preferences.

Indeed, work routines do appear to be mildly responsive to the manifest interests of youth (see Table 10.1.1). The addition of the interest scales results in from 1 to 6 percent absolute increases in the variance explained in the outcomes. These increments to explained variance generally exceed those obtained earlier when considering the influence of manifest interests on school attainments and work values. Consideration of these interest patterns also tends to decrease the main effects of sex on at least two types of job activities, Realistic and Investigative. Hence, interest patterns do seem to account for some small portion of gender-linked differences in work activities.

No individual interest dimension influences the frequency of Realistic activities on the job. The fact that our sample for this analysis is approximately 70 percent female,[2] combined with the fact that females achieved a relatively low mean on Realistic routines, produced a very marked sex effect on this outcome -- so large that it virtually swamped all other influences in the model and produced a substantial coefficient

Table 10.1.1 Prediction of Work Routines from Pre-Occupational Interests for the Class of 1966[a]

OUTCOME[b]	SEX	RACE	FAED	MOED	ABIL63	SCHOOLS +	SCHOOLS -	ACHV63	CURR63	REAL11	INVE11	ARTS11	SOCL11	ENTR11	CONV11	HOURS WORK	IN SCHOL	R^2	ADJ R^2
WORK-R (1)	-4.121* (-.564)	.250 (.020)	.062 (.047)	-.027 (-.018)	-.010* (-.083)													.329	.321
(2)	-4.180* (-.573)	.614 (.048)	.073 (.056)	-.010 (-.007)	-.011* (-.087)	--	--											.336	.320
(3)	-4.297* (-.588)	.569 (.044)	.085 (.065)	.016 (.010)	-.008 (-.068)	--	--	-.001 (-.032)	-.408 (-.069)									.341	.321
(4)	-3.674* (-.502)	.519 (.040)	.083 (.064)	-.013 (-.008)	-.009 (-.074)	--	--	-.002 (-.044)	-.594 (-.086)	.799 (.121)	.387 (.059)	.317 (.038)	.050 (.009)	-.290 (-.051)	.080 (.020)			.355	.326
(5)	-3.635* (-.497)	.518 (.040)	.095 (.072)	-.019 (-.013)	-.009 (-.071)	--	--	-.001 (-.026)	-.459 (-.067)	.803 (.122)	.528 (.078)	.390 (.046)	-.053 (-.008)	-.173 (-.042)	.087 (.022)	.048* (.136)	-.190 (-.025)	.373	.342
WORK-I (1)	-1.628* (-.175)	.202 (.012)	.115 (.069)	.097 (.048)	-.003 (-.020)													.041	.029
(2)	-1.677* (-.180)	-.046 (-.003)	.109 (.065)	.112 (.068)	-.002 (-.014)	--	--											.046	.023
(3)	-1.547* (-.166)	.235 (.014)	.094 (.056)	.065 (.034)	-.008 (-.054)	--	--	.006 (.106)	.279 (.032)									.067	.029
(4)	-.023 (-.003)	.080 (.005)	.065 (.039)	.013 (.007)	-.010 (-.064)	--	--	.005 (.088)	-.181 (-.021)	1.515* (.181)	1.167* (.136)	.078 (.007)	1.006* (.119)	.067 (.013)	-.343 (-.069)			.107	.067
(5)	-.033 (-.004)	.098 (.006)	.088 (.053)	.002 (.001)	-.010 (-.061)	--	--	.007 (.114)	.052 (.006)	1.528* (.182)	1.388* (.162)	.208 (.020)	.849 (.100)	.118 (.024)	-.314 (-.069)	.062* (.139)	-.635 (-.067)	.132	.088
WORK-A (1)	-.256 (-.067)	.403 (.060)	.021 (.031)	-.004 (-.006)	.001 (.013)													.008	-.004
(2)	-.284 (-.074)	.378 (.056)	.027 (.039)	-.003 (-.004)	.001 (.012)	3	--											.029	.006
(3)	-.306 (-.079)	.311 (.046)	.029 (.043)	.006 (.007)	.002 (.032)	--	--	-.001 (-.069)	-.026 (-.007)									.032	.003
(4)	-.664* (-.173)	.075 (.011)	.018 (.026)	-.020 (-.025)	.002 (.026)	--	--	-.003 (-.116)	-.288 (-.074)	-.168 (.048)	.185 (.052)	1.077* (.245)	-.095 (-.027)	-.097 (-.045)	.096 (.042)			.081	.039
(5)	-.681* (-.177)	.081 (.012)	.020 (.030)	-.021 (-.026)	.002 (.026)	--	--	-.003 (-.110)	-.249 (-.069)	-.165 (-.048)	.201 (.057)	1.085* (.247)	-.100 (-.029)	-.093 (-.043)	.083 (.040)	.000 (.002)	-.117 (-.030)	.081	.035
WORK-S (1)	.182 (.024)	-.510 (-.038)	.080 (.059)	-.035 (-.022)	.003 (.025)													.006	-.014
(2)	.203 (.027)	.027 (.002)	.087 (.064)	-.021 (-.013)	.003 (.020)	--	--											.019	-.005
(3)	.320 (.042)	-.218 (-.016)	.074 (.054)	-.028 (-.018)	.004 (.033)	--	--	-.004 (-.088)	.716 (.100)									.028	-.001
(4)	1.196* (.157)	-.244 (-.018)	.072 (.053)	-.067 (-.043)	.003 (.027)	--	--	-.004 (-.092)	.508 (.071)	1.165* (.170)	.407 (.058)	.167 (.019)	.432 (.062)	-.300 (-.070)	.012 (.003)			.051	.008
(5)	1.398* (.184)	-.296 (-.022)	.066 (.048)	-.070 (-.044)	.004 (.028)	--	--	-.005 (-.096)	.518 (.072)	1.149* (.167)	.435 (.062)	.202 (.023)	.333 (.048)	-.294 (-.069)	.046 (.011)	.058* (.160)	.786 (.101)	.071	.024
WORK-E (1)	-.469 (-.041)	-3.211* (-.158)	.060 (.029)	.296* (.123)	.003 (.014)													.049	.030
(2)	-.476 (-.041)	-3.319* (-.163)	.046 (.022)	.286* (.120)	.003 (.018)	--	--											.052	.028
(3)	-.259 (-.022)	-3.311* (-.163)	.021 (.010)	.240 (.100)	-.000 (-.001)	--	--	.001 (.018)	.901 (.083)									.058	.030
(4)	-.422 (-.037)	-3.827* (-.188)	-.014 (-.007)	.175 (.073)	.001 (.003)	--	--	.000 (.005)	.353 (.032)	.888 (.085)	.043 (.004)	.692 (.052)	2.026* (.192)	.433 (.068)	-.207 (-.033)			.108	.060
(5)	-.067 (-.006)	-3.937* (-.193)	-.054 (-.026)	.184 (.077)	-.000 (-.000)	--	--	-.002 (-.027)	.065 (.006)	.844 (.081)	-.198 (-.019)	.580 (.046)	2.063* (.196)	.373 (.057)	-.149 (-.024)	.018 (.033)	2.159* (.102)	.120	.064
WORK-C (1)	1.757* (.180)	-.114 (-.006)	.107 (.057)	-.028 (-.013)	.005 (.026)													.032	.021
(2)	1.795* (.172)	-.286 (-.015)	.073 (.039)	-.056 (-.026)	.006 (.032)	--	3											.048	.024
(3)	1.944* (.186)	.280 (.015)	.056 (.030)	-.127 (-.060)	-.005 (-.028)	--	--	.012* (.181)	.087 (.009)									.071	.044
(4)	2.440* (.233)	.327 (.018)	.073 (.039)	-.154 (-.071)	-.003 (-.018)	--	3	.015* (.222)	.119 (.012)	1.903* (.202)	-.712 (-.074)	-1.470* (-.123)	2.077* (.218)	.007 (.001)	.162 (.029)			.131	.092
(5)	2.372* (.227)	.348 (.019)	.081 (.043)	-.156 (-.072)	-.003 (-.017)	--	3	.015* (.228)	.170 (.017)	1.911* (.203)	-.669 (-.070)	-1.450* (-.121)	2.072* (.217)	.019 (.003)	.151 (.027)	-.004 (-.009)	-.408 (-.038)	.132	.088

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[a] Group AEQBP2, listwise N = 617. See Table A-2.

[b] See text for variable abbreviations.

*Significant at α ≤ .05; standardized coefficients in parentheses.

of determination ($R^2 = .37$). Employment in Investigative work, after controlling for length of the work week, was enhanced by both Realistic and Investigative predispositions. The influence of Realistic interests in this equation would not be expected were we dealing with higher level job incumbents and activities. However, in the sorts of entry positions probably secured by these youth, Investigative positions are largely technician roles whose routines tend to be quite Realistic.

Participation in Artistic pursuits at work is substantially and solely enhanced by Artistic predispositions. The standardized sex effects, usually quite large, are insignificant in this instance.

Realistic pre-occupational pursuits appear to enhance participation in Social type occupational routines. This result is contrary to expectation but probably should not be taken too seriously given the small explanatory power of the entire equation when adjusted for the number of predictors employed. The sex effect, although the largest in the equation, here again is not significant.

The determinants of Enterprising activities are noteworthy. First, no effect of Enterprising interests on this sort of activity are evident. Although it was found in Chapter 6, above, that blacks were more likely than whites to hold Enterprising interests, the indirect effects of race through these interests are minimal; however, after controlling for interests, black are less often engaged in Enterprising job routines than are whites. It is also noteworthy that this is the sole appreciable racial effect in Table 10.1.1. Finally, persons enrolled in school while working are more likely than other youth to be engaged in Enterprising activities on the job.

Almost half of the women in this sample have their highest work activity score on the Conventional routines scale, a condition that leads to a moderate sex effect. Conventional interests, do not, however, impact on these sorts of pursuits. The interests which enhance participation in Conventional job routines are Social and Realistic ones, the latter result being somewhat unanticipated. Artistic interests as an adolescent tend to deflect youth from jobs involving conventional routines.

The limited impact of interests on job routines documented above is disappointing in light of the emphasis placed on the role of manifest interests in career development theory. However, again we suggest that such theory may be too optimistic. Entry level workers, whether full- or part-time, may simply not have much latitude in seeking employment consistent with their interests. Distinctions among Holland types are much more clearly drawn among higher level positions in the labor market. Hence, finding distinct types of work at high school graduation probably is quite difficult under the best of circumstances, and most often circumstances likely are far from best -- opportunities are limited, youth labor markets are tight, vocational information is meager, and the need for income often is quite pressing. While youth may well prefer to take their interests into account when looking for a job, as a practical matter there may be little opportunity to do so.

10.2 DETERMINANTS OF WORK ROUTINES AMONG FULL-TIME WORKERS

In the previous section we examined the impact of eleventh grade pre-occupational interests upon the work routines of youth who were employed at least 20 hours a week. In these analyses, the contributions of interests to variation in work routines generally were small, ranging from one to six percent absolute increments in the (unadjusted) coefficients of determination. Although the relationships that did fall out were theoretically viable for the most part, they were sufficiently scattered and inconsequential that we have chosen to exclude interests from further analyses of work routines. Track placement, having no significant impact on the work routines of employed youth,[3] has also been set aside.

In this section we focus on the various non-interest determinants of the work routines encountered in different types of occupations. The analysis is based on youth from the AEQ panel who were employed at least 35 hours a week (N=354, listwise data-present; see Table A.2 for sample statistics as well as pairwise statistics from the parent sample). This sample of "full-time workers" is about 70 percent female, 8 percent black and only slightly less able (as judged by mean ability and achievement test scores) than the entire AEQ panel. For this group of workers we examine how the ascribed statuses of race, gender, and SES background, academic potential and performance, and job commitment (in hours per week and primacy of position) affect work activities three years after high school graduation. Our exclusion of interests and our restriction of the sample to full-time workers modestly decrease our ability to predict these outcomes in comparison to our earlier assessments (e.g., Table 10.1.1); this loss is offset by the advantage of parsimonious presentation. Whereas our earlier analyses of job routines concentrated on the role played by pre-occupational interests in their determination, we here shift our focus to non-interest sources of influence on occupational activity.

The data in Table 10.2.1 indicate that the predictability of the six types of work routines is quite uneven. Almost 40 percent of the variance in Realistic activities can be accounted for by a combination of these ascribed and achieved characteristics, whereas only approximately 7 percent of the variation in each of the other five types of routines is accounted for by the model. These differences are largely due to the differential impact of sex. Males are likely to be employed in jobs which entail high levels of Realistic activity, and/or to a lesser degree, Investigative activity. Females are somewhat more likely to find themselves involved in Conventional job routines. Job placements along the other activity dimensions are not affected by the worker's sex. These results correspond quite closely to the characteristic sex typing of low-level jobs -- with males employed in manual positions and females in clerical jobs.

Althouth sex is, in general, the most powerful predictor of the type of routines encountered, several other relationships are worth noting. Being enrolled in college and working more hours per week are associated with employment in more Socially-oriented jobs. Conventional routines are enhanced, all other factors being equal, by higher achievement in high school and depressed by additional hours worked per week. The majority of the Conventional tasks in which these youth are engaged would be low- to mid-level clerical tasks. The higher youths' high school achievement, the better prepared they would be to perform these routines and thus,

Table 10.2.1 Determinants of Work Routines for Youth
Employed at Least 35 Hours a Week[a]

	INDEPENDENT VARIABLES											
OUTCOME[b]	SEX	RACE	ABIL63	ACHV63	FAED	MOED	SCHOOLS +	SCHOOLS −	HOUR WORK	SCHOL NOW	R^2	ADJ R^2
WORK-R	-4.614* (-.609)	.128 (.010)	-.007 (-.055)	-.001 (-.030)	.074 (.055)	-.058 (-.036)					.380	.369
	-4.68* (-.617)	.460 (.035)	-.006 (-.050)	-.002 (-.046)	.066 (.048)	-.064 (-.040)	--	--			.388	.368
	-4.68* (-.618)	.445 (.034)	-.006 (-.052)	-.002 (-.036)	.069 (.051)	-.053 (-.033)	--	--	.034 (.046)	-.187 (-.021)	.391	.367
WORK-I	-1.636* (-.171)	.938 (.057)	-.008 (-.052)	.008* (.122)	.172 (.100)	-.009 (-.005)					.066	.040
	-1.666* (-.174)	.369 (.023)	-.007 (-.045)	.008* (.125)	.169 (.099)	-.025 (-.012)	--	--			.066	.036
	-1.515* (-.159)	.321 (.020)	-.007 (-.047)	.007 (.118)	.160 (.093)	-.020 (-.010)	--	--	.033 (.036)	.412 (.037)	.069	.033
WORK-A	-.268 (-.079)	.439 (.075)	.002 (.042)	-.002 (-.073)	-.013 (-.021)	-.025 (-.034)					.022	.005
	-.309 (-.091)	.443 (.076)	.002 (.038)	-.001 (-.066)	-.005 (-.009)	-.009 (-.012)	3	--			.053	.022
	-.245 (-.072)	.410 (.070)	.002 (.031)	-.001 (-.057)	-.007 (-.011)	.002 (.003)	3	--	.041* (.124)	.033 (.008)	.067	.032
WORK-S	.025 (.003)	-.658 (-.049)	.006 (.046)	-.002 (-.048)	.115 (.081)	-.039 (-.023)					.011	-.006
	.026 (.003)	-.204 (-.015)	.005 (.042)	-.003 (-.055)	.115 (.081)	-.019 (-.011)	--	--			.020	-.012
	.466 (.059)	-.353 (-.026)	.004 (.032)	-.004 (-.074)	.091 (.064)	.004 (.002)	--	--	.120* (.156)	1.083[a] (.118)	.050	.014
WORK-E	-.848 (-.075)	-2.918* (-.150)	-.001 (-.007)	.003 (.042)	.051 (.025)	.294* (.121)					.053	.037
	-.894 (-.079)	-2.928* (-.150)	.001 (.004)	.003 (.038)	.029 (.014)	.298* (.123)	--	--			.063	.033
	-.138 (-.012)	-3.127* (-.161)	-.001 (-.003)	-.001 (-.009)	-.023 (-.011)	.298* (.123)	--	--	.081 (.072)	2.517* (.191)	.094	.059
WORK-C	1.534* (.144)	.299 (.016)	-.007 (-.042)	.009* (.132)	.192 (.100)	-.096 (-.042)					.043	.027
	1.612* (.151)	-.333 (-.018)	-.006 (-.034)	.010* (.140)	.173 (.090)	-.148 (-.065)	--	--			.059	.029
	1.301* (.122)	-.213 (-.012)	-.005 (-.027)	.010* (.144)	.187 (.098)	-.174 (-.076)	--	--	-.115* (-.111)	-.603 (-.049)	.072	.036

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[a] Group AEQGP2, listwise N = 354; see Table A-2.

[b] See text for variable abbreviations.

*Significant at $\alpha \leq .05$; standardized coefficients in parentheses.

presumably, the more opportunity they would be given to carry out such tasks. On the other hand, low-level clerical positions involve fixed work schedules. Hence, an extended work week probably signifies that the position being filled is not a typical clerical position.

The determinants of performing Enterprising activities on the job are of particular interest. First, as was noted in Section 10.1, above, blacks are significantly less likely than whites to be engaged in Enterprising routines, a result consistent with earlier research (see Gottfredson, 1977). Youth who are enrolled in college (while working at least 35 hours a week) are more likely than terminal high school graduates to be so engaged. An additional socioeconomic advantage is registered through mother's education.

In summary, except for Realistic activities, our model is only minimally successful in predicting the work routines of young adults occupying full-time "entry level" positions. Sex of the incumbent is extremely useful in predicting the frequency with which Realistic tasks are undertaken, as well as, to a lesser degree, Investigative and Conventional tasks. Blacks are disadvantaged and college students advantaged in being exposed to Enterprising activities on the job.

10.3 THE PATTERNING OF WORK ROUTINES

Our analysis thus far has considered each of the work activity dimensions separately. Since the average intercorrelation among the RIASEC codings of routines is only .145 (ranging from .028 to .386), this probably characterizes adequately the major background and interest influences upon work routines. At the same time, however, jobs do comprise clusters of activities and our analysis has not been sensitive to any possible patterning of work routines. Tables 10.3.1 and 10.3.2 examine background and interest influences upon work activities within a multivariate/multidimensional framework. They report the results of canonical correlational analyses in which work activities constitute one cluster and manifest interests alone then manifest interests and background variables constitute the second. Canonical analysis generates weighted linear composites within sets of variables. The weights are selected so as to maximize the correlation between composites. Pairs of composites are extracted such that later pairs are orthogonal to preceding ones. Canonical weights reflect the relative contribution of variables within sets to that sets' canonical variates. These analyses are limited to full-time workers (i.e., those employed at least 35 hours a week) with no missing data on any of the measures used (N=354).

Table 10.3.1, which relates interests to rewards, reveals two statistically significant canonical correlations, though the second, at .324, is quite modest (by convention, .30 often is used as the threshold of substantive importance -- see Cooley and Lohnes, 1971). Realistic interests and Realistic routines are singularly important as components of the first canonical variates, although if we use the .30 criterion for loadings, Investigative routines also contribute moderately to the first factor. It appears then that Realistic interests are associated with later employment in Realistic and, secondarily, Investigative

Table 10.3.1 Canonical Correlation Analysis of Eleventh Grade Manifest Interest Influences on Work Routines (N = 354)

First Canonical Correlation
(.592; Wilk's Lambda, .546)

Interest	Loadings	Routine	Loadings
REAL11	.787	WORK-R	.863
INVE11	.161	WORK-I	.354
ARTS11	.004	WORK-A	-.039
SOCL11	-.025	WORK-S	-.172
ENTR11	-.048	WORK-E	.255
CONV11	-.253	WORK-C	-.106

Second Canonical Correlation
(.324; Wilk's Lambda, .841)

Interest	Loadings	Routine	Loadings
REAL11	.159	WORK-R	-.326
INVE11	.287	WORK-I	.460
ARTS11	.060	WORK-A	.211
SOCL11	.824	WORK-S	-.037
ENTR11	.166	WORK-E	.577
CONV11	.067	WORK-C	.395

work. Holland's "The Occupations Finder " (1977) provides a listing of specific occupations that embody the characteristics of various code combinations. Some representative RIE occupations are mechanical engineer, automobile mechanic, plumber and roofer. These are examples of the kind of work suggested by the first canonical variate, although we do caution that none of our respondents may be employed in any of them and the parallels between our clusters, defined by the relative loadings of RIASEC-type scales, and the typological organization of occupations in the "occupations finder" are inexact.

The loadings for the second canonical variates are more diversified, but also, it must be recalled, less important. Once again, one domain of adolescent activity stands out, in this instance Social, although the Investigative scale falls just short of the .30 cut-off. The jobs of young workers who, as adolescents, evidenced Social interests involve mainly Enterprising, Investigative and Conventional activities and are noticeably lacking in Realistic content. It is noteworthy that Social interests are not realized through characteristically Social work. In the second canonical variates, then, we do see some evidence of patterning in job routines and of the importance of interests in providing access to work environments that are distinctive along several dimensions. While this is a rather unusual combination of characteristics, Holland's job finder does identify at least one occupation, banker, as entailing ECI routines.

Table 10.3.2 employs a more inclusive set of work routine predictors, adding background variables, school enrollment status and school dummies

Table 10.3.2 Canonical Correlation Analysis of Background and Eleventh Grade Manifest Interest Influences on Work Routines[a]

First Canonical Correlation
(.662; Wilk's Lambda, .341)

Background Interest	Loading	Routine	Loading
SEX	-.800	WORK-R	.900
REAL11	.218	WORK-I	.291
		WORK-A	-.005
		WORK-S	-.211
		WORK-E	.219
		WORK-C	-.082

Second Canonical Correlation
(.422; Wilk's Lambda, .606)

Background Interest	Loading	Routine	Loading
RACE	-.218	WORK-R	-.129
ACHV63	.419	WORK-I	.450
REAL11	.292	WORK-A	-.208
ARTS11	-.257	WORK-S	-.346
SOCL11	.684	WORK-E	.479
HRWORK	-.255	WORK-C	.555
SCHOL2	-.333		
SCHOL3	-.365		
SCHOL4	-.345		
SCHOL22	.202		

Third Canonical Correlation
(.365; Wilk's Lambda, .738)

Background Interest	Loading	Routine	Loading
SEX	.328	WORK-R	-.369
RACE	-.341	WORK-I	.160
ACHV63	-.371	WORK-A	.373
MOED	.325	WORK-S	.346
ARTS11	.276	WORK-E	.712
HRWORK	.548	WORK-C	-.549
SCHOL NOW	.497		
SCHOL3	.331		

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[a] Variables from the predictor set with loadings less than .200 are not reported. The following were included in the analysis but do not appear in any of the three sets of loadings: ABIL63; FAED; INVE11; ENTR11; CONV11; SCHOL23.

to the manifest interest cluster. In this instance three significant canonical correlations are extracted. The first again loads almost exclusively on Realistic routines in the work activities set, but sex displaces Realistic interests as its dominant correlate. In fact, the sex differential is so pronounced that the first canonical variate in the predictor set is essentially a sex factor. No other loading even approaches the .30 criterion in this instance. The results give powerful testimony to the sex-typing of work routines.

The second canonical variates are more multifaceted. On the work routines side, we again find a distinctive pattern of work activities standing out: again high on Conventional, Enterprising and Investigative dimensions but this time low on Social. Socially-oriented youth tend to be overrepresented in this sort of work environment, as are youth with high standardized achievement. The first of these loadings suggests a mismatch of interests with work activities. Interestingly, we also find that three of the five school dummies are significant, indicating that something about the school or community setting affects the kind of employment youth find. Although we cannot pursue further at this point precisely what situational influences might be at issue here, this raises some intriguing possibilities that are deserving of further study.

The third canonical variate in this routines cluster identifies another work activities pattern. This is primarily an Enterprising factor, but with several additional secondary qualities. This work also entails Artistic and Social routines, but is noticeably lacking in Conventional and Realistic task structures. Occupations which combine ESA characteristics would include certain sales positions, especially involving musical and photographic equipment, flight attendant and lawyer. Although no interest dimensions are especially important in locating youth in this type of employment, several other attributes are. Men, blacks, youth with highly educated mothers and youth who don't score especially well on standardized achievement tests all are somewhat overrepresented in this sort of work environment, as are youth who are continuing their educations. These youth also tend to work longer workweeks. This, then, seems to be the sort of work that either attracts or is available to ambitious, if not overly bright, men, youth from somewhat advantaged socioeconomic backgrounds, and minorities.

In being sensitive to the patterning of work routines, these analyses provide valuable detail on the character of work and on the complexity of job placement that is slighted in examining activities singly. As will be evident shortly, this is even more important in considering dimensions of occupational rewards, for these are much more strongly intercorrelated than are the various routine dimensions. The rewards of work are the focus of our last analysis chapter, which follows next.

FOOTNOTES

[1] See Table A.2 for sample characteristics.

[2] See Appendix D for the distribution of all youth (listwise N=1989) according to college enrollment status and working status.

[3] This result was not expected. We had anticipated that academic enrollment would channel youth away from Conventional, Realistic, and perhaps Enterprising activities insofar as these jobs might be disproportionately occupied by vocational and business track students. However, the similarity of all low-level positions likely was responsible for the failure of track to predict routines.

Chapter 11 -- The Work Returns Experienced by Young Adults

The earnings returns to job incumbency largely determine the material quality of life enjoyed by youth, while other job rewards associated with the routines of work -- feelings of social service, engagement in one's job routines, feelings of autonomy and responsibility, enjoyment of superiors and fellow workers -- contribute substantially to the psychological quality of their lives. To the degree that youth achieve modest to substantial returns along valued dimensions, their career decisions will have proven beneficial to their overall well being and their work satisfaction will be high. AEQ respondents who were working outside of the home were asked to rate a set of 25 job characteristics according to their importance in their jobs (see Chapter 5, Section 1). These job characteristics, or work returns, were clustered into six dimensions: earnings or extrinsic returns (EARNS); social service (SERVE); engagement in the work routines themselves (ENGAG); the people or work associations (ASSOC); the power or authority accruing to the position (POWER); and the degree to which the job was not overly demanding in time or effort (SINEC).

In this final analysis chapter we first consider the impact of preoccupational manifest interests on these job returns. In section 11.2 we examine the relationship between occupational type of job held (determined by a clustering of work routines into the Holland RIASEC typology) and these returns. We then turn to the major concern of this chapter, the determinants of returns to work among employed young adults (section 11.3). In most of this last analysis, the experiences of four groups are contrasted: first, all youth employed at least 20 hours a week and then, separately, the two major groups of youth this includes, terminal high school graduates and workers who are also college students; finally, we also examine separately full-time workers, those employed at least thirty-five hours a week. The use of two work commitment thresholds (i.e., 20 hours and 35 hours) is somewhat cumbersome; however, this is dictated by certain features of the AEQ follow-up questionnaire. The series of items eliciting information on job returns was preceded by routing instructions indicating that only those working at least twenty hours a week should respond. This, then, is the most inclusive sample for which job rewards data are available. Another question allowed us to distinguish between those presently enrolled in college and those not so enrolled, and it seemed prudent to do so since work commitment and work experiences might well differ across these two groups. Another item on the questionnaire asked the number of hours worked per week, which permitted us to identify full-time workers for separate consideration. Additional detail on these complications and distinctions is presented in Appendix D.

11.1 PRE-OCCUPATIONAL INTERESTS AND WORK RETURNS

Persons in the AEQ sample who worked at least 20 hours a week[1] rated a set of 25 job reward characteristics to assess the importance of each characteristic in their present jobs. We scaled these responses to characterize the "returns" available through work (see Chapter 5 for details on scale construction). If youth seek out work consistent with their pre-occupational interests or if market mechanisms sort youth along these lines, the kinds of work gratification realized should relate to interests roughly in the fashion suggested earlier in Chapter 6 for work values.

Pre-occupational interests turn out to be somewhat more effective in predicting satisfaction with work returns than they were in explaining work values, adding (as a set) from 1 to 4.5 percent absolute to the explained variance across the six outcomes (see Table 11.1.1). Interestingly, in all six instances, adding interest scales to the analysis increased the sex coefficient (although in three instances the coefficient failed to reach statistical significance), a classic pattern of suppressor effects. Since social service and associations reward dimensions were not responsive to any of the interest scales, we need not consider them further. Interest influences on the other four outcomes, on the other hand, are largely consistent with theoretical speculations and deserve comment.

Persons with higher scores on Artistic interests tend to report that extrinsic returns are not very prominent in their work. Controls for hours worked and whether the individual is working while going to school reduce this effect somewhat, however. Since Artistic pursuits were virtually the sole interest domain to relate to educational goals and college application status while in high school (see Chapter 6, above), it should not be surprising that many persons scoring high on Artistic

Table 11.1.1 The Prediction of Work Returns from Pre-Occupational Interests for the Class of 1965[a]

INDEPENDENT VARIABLES

OUTCOME[b]		SEX	RACE	FAED	MOED	ABIL63	SCHOOLS +	SCHOOLS -	ACHV63	CURR63	REAL11	INVE11	ARTS11	SOCL11	ENTR11	CONV11	HOURS WORK	IN SCHOL	R^2	ADJ R^2
EARNS-R	(1)	.161 (.079)	.027 (.008)	-.040* (-.109)	-.061* (-.143)	-.007* (-.191)													.099	.088
	(2)	.152 (.074)	.101 (.028)	-.033 (-.089)	-.052* (-.123)	-.007* (-.199)	3	--											.122	.100
	(3)	.062 (.031)	-.097 (-.027)	-.022 (-.061)	-.020 (-.046)	-.003 (-.073)	3	--	-.004* (-.339)	-.186 (-.097)									.227	.204
	(4)	.252 (.124)	-.020 (-.005)	-.020 (-.055)	-.015 (-.037)	-.003 (-.077)	3	--	-.004* (-.313)	-.132 (-.069)	.063 (.034)	.052 (.027)	-.269* (-.116)	.043 (.023)	-.042 (-.036)	-.068 (-.062)			.241	.206
	(5)	.197 (.097)	.000 (.000)	-.009 (-.026)	-.019 (-.045)	-.002 (-.071)	--	--	-.003* (-.262)	-.043 (-.022)	.072 (.039)	.132 (.070)	-.226 (-.097)	.006 (.003)	-.019 (-.016)	-.077 (-.070)	.010* (.098)	-.451* (-.216)	.292	.256
SERVE-R	(1)	.486* (.173)	.062 (.013)	.009 (.019)	.009 (.016)	-.003 (-.062)													.034	.022
	(2)	.479* (.181)	.039 (.008)	.015 (.033)	.028 (.050)	-.003 (-.063)	4	--											.065	.042
	(3)	.472* (.179)	-.163 (-.035)	.016 (.034)	.043 (.079)	.000 (.005)	4	--	-.004* (-.241)	.163 (.066)									.101	.074
	(4)	.680* (.258)	-.169 (-.036)	.012 (.026)	.034 (.062)	-.000 (-.002)	4	--	-.004* (-.261)	.103 (.041)	.081 (.034)	.144 (.059)	.238 (.078)	-.044 (-.019)	-.062 (-.042)	-.097 (-.068)			.112	.071
	(5)	.644* (.244)	-.158 (-.034)	.016 (.034)	.033 (.060)	-.000 (-.000)	4	--	-.004* (-.247)	.132 (.053)	.085 (.036)	.169 (.069)	.247 (.082)	-.048 (-.020)	-.055 (-.037)	-.103 (-.072)	-.002 (-.015)	-.220 (-.081)	.115	.071
ENGAG-R	(1)	.291* (.143)	-.169 (-.047)	-.006 (-.017)	-.011 (-.026)	-.007* (-.189)													.056	.045
	(2)	.306* (.150)	-.084 (-.023)	-.003 (-.009)	-.001 (-.002)	-.007* (-.190)	3,4	--											.091	.069
	(3)	.288* (.141)	-.167 (-.047)	-.001 (-.003)	.009 (.021)	-.005* (-.146)	3,4	--	-.002* (-.135)	.002 (.001)									.104	.078
	(4)	.367* (.180)	-.191 (-.053)	-.007 (-.020)	-.003 (-.006)	-.005* (-.159)	--	--	-.002* (-.157)	-.068 (-.035)	-.065 (-.035)	.179 (.096)	.249 (.107)	.150 (.081)	-.110 (-.096)	-.160* (-.146)			.136	.097
	(5)	.345* (.169)	-.182 (-.051)	-.001 (-.001)	-.005 (-.013)	-.005* (-.155)	--	--	-.002* (-.123)	-.004 (-.002)	-.059 (-.032)	.238* (.127)	.282* (.121)	.116 (.062)	-.094 (-.082)	-.163* (-.149)	.011* (.118)	-.250* (-.120)	.165	.123
ASSOC-R	(1)	.435* (.233)	-.359* (-.109)	-.010 (-.030)	-.018 (-.046)	-.004* (-.138)													.083	.072
	(2)	.440* (.235)	-.147 (-.045)	-.014 (-.043)	-.016 (-.041)	-.004* (-.136)	--	22											.112	.090
	(3)	.420* (.224)	-.216 (-.066)	-.012 (-.036)	-.007 (-.018)	-.003 (-.094)	--	22	-.001* (-.125)	-.020 (-.012)									.124	.098
	(4)	.618* (.330)	-.169 (-.051)	-.012 (-.036)	-.011 (-.029)	-.003 (-.099)	--	22	-.001* (-.121)	-.015 (-.008)	.069 (.041)	.028 (.016)	.047 (.022)	-.003 (-.001)	-.093 (-.088)	-.106 (-.106)			.137	.098
	(5)	.627* (.335)	-.169 (-.051)	-.009 (-.028)	-.013 (-.033)	-.003 (-.087)	--	22	-.001 (-.105)	.016 (.009)	.070 (.041)	.058 (.034)	.066 (.031)	-.028 (-.017)	-.084 (-.080)	-.105 (-.104)	.011* (.125)	-.040 (-.021)	.153	.110
POWER-R	(1)	-.037 (-.019)	.113 (.033)	-.036 (-.104)	.011 (.028)	-.001 (-.039)													.014	.002
	(2)	-.033 (-.017)	.194 (.057)	-.037* (-.109)	.011 (.029)	-.001 (-.038)	--	--											.028	.004
	(3)	-.045 (-.023)	.117 (.034)	-.036 (-.104)	.019 (.049)	.000 (.003)	--	--	-.002* (-.131)	.022 (.012)									.039	.011
	(4)	.204 (.106)	.140 (.041)	-.038* (-.110)	.005 (.012)	-.000 (-.009)	--	--	-.002* (-.132)	-.024 (-.013)	.156 (.090)	.126 (.071)	.142 (.065)	.198 (.112)	-.187* (-.172)	-.153* (-.148)			.085	.044
	(5)	.243 (.126)	.130 (.038)	-.039* (-.113)	.004 (.011)	-.000 (-.009)	--	--	-.002* (-.135)	-.021 (-.012)	.153 (.088)	.133 (.075)	.149 (.068)	.178 (.101)	-.185* (-.171)	-.146* (-.141)	.011* (.125)	.148 (.075)	.097	.052
SINEC-R	(1)	.027 (.013)	.395* (.106)	-.022 (-.058)	-.011 (-.025)	-.001 (-.040)													.021	.009
	(2)	-.001 (-.000)	.361 (.097)	-.022 (-.057)	-.019 (-.044)	-.001 (-.041)	--	4											.040	.017
	(3)	-.004 (-.002)	.376 (.101)	-.021 (-.056)	-.020 (-.045)	-.002 (-.046)	--	4	.000 (.020)	-.027 (-.014)									.040	.012
	(4)	-.268 (-.126)	.296 (.079)	-.025 (-.065)	-.019 (-.043)	-.002 (-.061)	--	4	-.000 (-.006)	-.083 (-.042)	-.254 (-.133)	.306* (.156)	.070 (.029)	.011 (.006)	-.048 (-.040)	.099 (.087)			.069	.026
	(5)	-.241 (-.114)	.284 (.076)	-.033 (-.088)	-.015 (-.035)	-.002 (-.067)	--	4	-.001 (-.047)	-.164 (-.082)	-.261 (-.136)	.230* (.118)	.028 (.012)	.054 (.028)	-.069 (-.058)	.103 (.090)	-.015* (-.144)	.315* (.145)	.112	.067

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[a] Group AEQGP2, listwise N = 417. See Table A-2.

[b] See text for variable abbreviations.

*Significant at $\alpha \leq .05$; standardized coefficients in parentheses.

activity are enrolled in college three years beyond high school and view the extrinsic job rewards of their work (salary, retirement, benefits, paid vacation, etc.) as somewhat marginal or even lacking. At the same time, however, such persons tend to place less importance on these material rewards (see Chapter 6) and it well could be that this also contributes to their being underrepresented in more lucrative positions.

After extent of work is taken into consideration and the differential satisfaction of those workers who are also students is removed, persons who, as juniors in high school, scored high on Investigative and Artistic pursuits indicate that their jobs are more engaging -- they report more variety in the job, more interesting work, more challenging work, and so forth. Persons with Conventional interests, on the other hand, see relatively little opportunity for these sorts of gratifications.

Power or autonomy on the job also is rather responsive to pre-occupational interests. Enterprising and Conventional interests appear to diminish the perceived opportunity for independence and responsibility at work. Finally, we observe a somewhat anomalous positive effect of Investigative interests on the sinecure dimensions of work returns (easy work, short hours).

We have been tempted at several points in this discussion to make an attractive but unwarranted inferential leap -- to assume that youth have sought out work consistent with their interests and that these returns of work are characteristic of particular types of employment. If interests mapped perfectly, or nearly so, onto work routines and routines onto rewards, then this would be a reasonable conclusion. However, as was documented in the last chapter, interests do not map onto routines especially well, and analyses to be presented in the following sections indicate that neither do routines map perfectly on to returns. In that light we must be clear about what can and cannot be concluded from the above results.

First, the impacts of interests upon work returns are generally modest. They are certainly not effects sufficiently robust to support elaborate super-structures of explanation. Additionally, we cannot be entirely certain as to the nature of these dependent variables (see Chapter 5) -- we only know that they assess "the perceived opportunity on the present job to realize certain outcomes," most of which are presumed desirable. We have decided to employ them as rough indicators of job satisfaction as well as measures of job returns. Thus, as in the case of our power dimension, persons who had scored high on Enterprising and Conventional interests as high school students see their jobs as offering relatively little opportunity for autonomous behavior and the exercise of responsibility. They are, presumably, dissatisfied with these returns. We don't know, however, why these interests lead to dissatisfaction. It could be that persons with these interests to some degree seek out or fit into positions of subordination. On the other hand, these effects could follow from the composition of our sample, it being here about 70 percent female. Most jobs open to young females working part-time or full-time while in college, or young females with a terminal high school diploma are lower level clerical, sales, or other service jobs, and these jobs offer little opportunity for responsibility.

More generally, low level jobs are relatively homogeneous with respect to returns. Although Gottfredson (1977) notes some very convincing differences among types of work along financial, prestige, and educational payoff dimensions, her workers are older, many are much more highly educated, and the range of job levels represented is quite broad. Even if the interests of our youth were perfectly matched with type of routine (which was hardly the case), it is doubtful that marked differences in returns would be evidenced at the low level positions they most often occupy.

Furthermore, it also is unclear whether the modest associations between pre-occupational interests and work returns documented in this analysis reflect the importance of interests in locating youth in jobs with different reward potential or whether interests somehow affect reward expectations and thereby raise or lower satisfaction thresholds. Hence, the same objective reward levels might be reacted to quite differently depending on the worker's interests and expectations. The present analysis cannot distinguish these two possibilities, except insofar as occupational type (i.e., differences in work routines classified according to the RIASEC scheme) controls for objective reward potential. This, of course, is a weak proxy for non-subjective data on work rewards.

11.2 THE RELATION BETWEEN OCCUPATIONAL TYPE AND WORK RETURNS

Before examining the net effects of occupational routines on the returns to work, it will be informative to consider the overall relationship between occupational type and these career outcomes. Gottfredson

(1977) has presented persuasive evidence that the six types of occupations identified by Holland's theory of career choice differ systematically in the returns received by incumbents. In particular, higher income and lower prestige accrue to Enterprising activities, while the reverse is the case for Social jobs. Investigative jobs afford high prestige and higher income than do Social positions, whereas Realistic and Conventional jobs are accorded lower prestige and income. The requirements, particularly educational certification, for these types of jobs differ also; and, predictably, the returns to education are somewhat in line with these certification requirements.

The returns to work available for examination here are at once more and less limited than those available to Gottfredson (1977). The earnings dimensions (EARNS-R) of job rewards captures the more tangible (e.g., income and fringe) aspects of occupational returns (see Chapter 5 where these scales are developed); the power dimension (POWER-R) taps prestige insofar as responsibility and "being looked up to" relate to general occupational status. The other dimensions of job returns available to us -- social service (SERV-R), engagement in work routines (ENGAG-R), enjoyment of co-workers (ASSOC-R), and job sinecure (SINEC-R) -- should also differentially accrue to different occupational types (see Table B.1 for a description of the Holland typology). Social jobs should contribute to increased feelings of social service, Investigative positions should allow higher levels of engagement in work routines, Investigative and Social activities should increase power returns; Enterprising and Conventional jobs should afford the most opportunity to interact with co-workers. No predictions concerning "job irrelevancy" can be drawn directly from the Holland theoretical type descriptions.

As was described in Chapter 5, continuous work activity scales were developed indexing the frequency with which job tasks representative of the six Holland occupational types were undertaken on the job. From these continuous scales, "high point" codes for job type were developed (see Sections 5.2.C. and 5.2.D. for more detail). Briefly, respondents were assigned a single code -- R, I, A, S, E, or C -- corresponding to the occupational type for which their continuous scale scores were the highest. Tied continuous scores were systematically resolved. Whereas the continuous scores allow us to consider a particular job as a composite of different activity types, the high point scores allow us to determine whether the predominant type of activity engaged in by the youth differentially affects his/her job returns.

Our examination of gross type-to-type variations in job returns is conducted on listwise data-present samples of AEQ youth which range in size from 948 to 958 (414 - 420 males and 534 - 538 females). All of these youth worked at least 20 hours a week (the cut-off criterion for completing the questionnaire section relating to job routines); selection criteria for sample inclusion, in addition to non-missing data on occupational type, were non-missing data on sex and the returns indicator under consideration.

These relationships are presented in Table 11.2.1. For the total, pooled-sex sample, the "Earnings," "Service," "Association," and "Power" returns to work vary systematically by occupational type, although the

Table 11.2.1 Mean Differences in Work Returns by Type of Occupational Routines -- Males and Females Combined

DEPENDENT VARIABLE ($\overline{X}$, SD, n group)		OCCUPATIONAL ACTIVITY GROUP -- R	I	A	S	E	C	TOTAL SAMPLE TOTAL	(N = 1170)[a] TYPE ETA^2	SEX ETA^2
EARNS-R	$\overline{X}$	3.661	3.790^L	3.364	3.324	3.296^S	3.540	3.540	.031*	.000
	SD	1.024	.916	1.129	1.090	1.060	.867	.971		
	(n)	(105)	(199)	(25)	(89)	(158)	(378)	(954)		
SERVE-R	$\overline{X}$	3.038	3.153	2.860^S	3.904^L	3.135	3.130	3.296	.046*	.008*
	SD	1.222	1.069	1.476	1.245	1.243	1.198	1.220		
	(n)	(104)	(198)	(25)	(89)	(157)	(376)	(949)		
ENGAG-R	$\overline{X}$	3.562	3.773	3.486	3.526	3.496	3.581	3.598	.010	.012*
	SD	1.001	.841	1.122	1.240	1.004	.931	.973		
	(n)	(105)	(200)	(25)	(89)	(158)	(379)	(956)		
ASSOC-R	$\overline{X}$	3.832	3.901	3.880	3.813^S	4.066^L	4.071^L	3.980	.014*	.050*
	SD	.913	.921	1.014	1.019	.823	.882	.905		
	(n)	(105)	(201)	(25)	(89)	(159)	(379)	(958)		
POWER-R	$\overline{X}$	2.956	3.057^L	2.600^S	2.947	2.842	2.791	2.883	.015*	.006*
	SD	.984	.867	1.146	.971	.946	.907	.931		
	(n)	(105)	(201)	(25)	(89)	(158)	(379)	(957)		
SINEC-R	$\overline{X}$	2.457	2.264	2.326	2.320	2.344	2.340	2.335	.003	.001
	SD	1.022	.897	.984	1.064	1.014	.964	.975		
	(n)	(105)	(199)	(23)	(89)	(157)	(375)	(948)		

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[a] Calculated on a pair-wise sample, where only sex and one job return are considered.

[L] Largest mean where type differences are significant.

[S] Smallest mean where type differences are significant.

*ETA significant at $\alpha \leq .05$.

squared-etas range from only one to four and one half percent. The mean differences suggested in Table 11.2.1 are generally consistent with expectations. Investigative positions offer the greatest earnings as well as the largest power returns to job incumbency. Social positions are the most likely to offer high social service returns, and Conventional and/or Enterprising jobs offer the largest benefits from associations at the work place.

Small sex effects (see last column Table 11.2.1), reminiscent of the sex differences in work returns noted in Chapter 5, led us to examine occupational impacts on job returns separately for the male and female samples. These analyses are reported in Tables 11.2.2 and 11.2.3. Among young employed males (Table 11.2.2), occupational type explains from 3 to 5 percent of the variance in job returns along five of the six dimensions. Investigative positions are generally the most satisfying -- offering substantial earnings, engagement, power, and social service[2] returns to incumbency. Social positions are markedly less rewarding than other types of work along most dimensions of job returns. This pattern of results was not anticipated and can be accounted for only by recourse to the fact that the Social jobs indexed here are low-level positions more characteristic of females than males, and the experiences of men in them may be atypical. Enterprising positions are, as expected, associated with higher returns from interpersonal aspects of the job (as are Artistic undertakings among these youth[2]) as well as opportunities to exercise responsibility.[2]

Among females (Table 11.2.3), the occupational effects on job returns differ from those evidenced for males. Social positions, as

Table 11.2.2 Mean Differences in Work Returns by Type of Occupational Routines -- Males

DEPENDENT VARIABLE		OCCUPATIONAL ACTIVITY GROUP -- MALES							
($\overline{X}$, SD, n group)		R	I	A	S	E	C	TOTAL	TYPE ETA^2
EARNS-R	$\overline{X}$	3.633	3.721^{L}	3.592	3.073^{S}	3.352	3.440	3.538	.032*
	SC	1.036	.975	1.242	1.188	1.079	.988	1.043	
	(n)	(93)	(130)	(15)	(29)	(59)	(91)	(417)	
SERVE-R	$\overline{X}$	3.082	3.419^{L}	3.033	3.224	3.322	2.806^{S}	3.169	.039*
	SD	1.175	1.082	1.445	1.386	1.181	1.128	1.180	
	(n)	(92)	(129)	(15)	(29)	(59)	(90)	(414)	
ENGAG-R	$\overline{X}$	3.578	3.710^{L}	3.347	2.917^{S}	3.505	3.244	3.481	.051*
	SD	.957	.912	1.297	1.350	.985	1.023	1.027	
	(n)	(93)	(130)	(15)	(29)	(59)	(92)	(418)	
ASSOC-R	$\overline{X}$	3.839	3.742	3.867^{L}	3.126^{S}	3.878^{L}	3.699	3.735	.035*
	SD	.890	.970	1.160	1.089	.702	1.015	.957	
	(n)	(93)	(131)	(15)	(29)	(60)	(92)	(420)	
POWER-R	$\overline{X}$	2.978	3.104^{L}	2.787	2.517^{S}	3.129^{L}	2.779	2.956	.035*
	SD	.953	.902	1.070	1.060	.868	1.026	.966	
	(n)	(93)	(131)	(15)	(29)	(59)	(92)	(419)	
SINEC-R	$\overline{X}$	2.409	2.269	2.433	2.224	2.353	2.388	2.341	.005
	SD	1.005	.902	1.067	1.154	1.034	1.013	.990	
	(n)	(93)	(130)	(15)	(29)	(58)	(89)	(414)	

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*ETA significant at $\alpha \leq .05$.

^{L}Largest mean where type differences are significant.

^{S}Smallest mean where type differences are significant.

Table 11.2.3 Mean Differences in Work Returns by Type of Occupational Routines -- Females

DEPENDENT VARIABLE		OCCUPATIONAL ACTIVITY GROUP--FEMALES							
($\bar{X}$, SD, n group)		R	I	A	S	E	C	TOTAL	TYPE ETA^2
EARNS-R	$\bar{X}$	3.881^L	3.919^L	3.021^S	3.446	3.263	3.572	3.542	.050*
	SD	.935	.785	.887	1.027	1.052	.824	.912	
	(n)	(12)	(69)	(10)	(60)	(99)	(287)	(537)	
SERVE-R	$\bar{X}$	2.708	3.688	2.600^S	4.233^L	3.311	3.232	3.394	.083*
	SD	1.559	1.029	1.560	1.031	1.285	1.203	1.242	
	(n)	(12)	(69)	(10)	(60)	(98)	(286)	(535)	
ENGAG-R	$\bar{X}$	3.433	3.889	3.695	3.820	3.491	3.689	3.688	.019
	SD	1.342	.681	.812	1.077	1.020	.873	.920	
	(n)	(12)	(70)	(10)	(60)	(99)	(287)	(538)	
ASSOC-R	$\bar{X}$	3.778	4.200	3.900	4.144	4.180	4.190	4.170	.008
	SD	1.122	.741	.806	.801	.872	.800	.814	
	(n)	(12)	(70)	(10)	(60)	(99)	(287)	(538)	
POWER-R	$\bar{X}$	2.783	2.970	2.320^S	3.154^L	2.671	2.794	2.826	.030*
	SD	1.234	.796	1.255	.860	.953	.867	.900	
	(n)	(12)	(70)	(10)	(60)	(99)	(287)	(538)	
SINEC-R	$\bar{X}$	2.833	2.254	2.125	2.367	2.338	2.325	2.332	.008
	SD	1.115	.894	.834	1.025	1.007	.950	.964	
	(n)	(12)	(69)	(8)	(60)	(99)	(286)	(534)	

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*ETA significant at $\alpha \leq .05$.

[L] Largest mean where type differences are significant.

[S] Smallest mean where type differences are significant.

theoretically expected, offer the most opportunity for experiencing gratification due to social service and for exercising responsibility. Earnings are enhanced by Realistic or Investigative job-incumbency or, in other words, employment in stereotypically male types of work. Other job returns are not influenced by the type of occupation in which young women are employed.

Numerous factors which might be expected to influence job rewards and to mediate the effect of type of work on these rewards are uncontrolled in these preliminary investigations. In particular, the hours worked per week and whether the job is the worker's primary commitment or is combined with college attendance should affect the returns received from occupational incumbency. Other considerations, such as ability, prior preparation, and socioeconomic background are of interest in their own right as well for achieving a more proper picture of how activities relate to rewards. The failure to control for these potentially confounding influences may have contributed to some of the unexpected associations evidenced in these data. Therefore, in the following section we examine the determinants of returns to work and how occupational activities contribute to these returns for several groups of youth: 1) all workers employed 20 or more hours a week; 2) full-time workers (35 hours or more a week); 3) workers who also are enrolled in college; and 4) terminal high school graduates.

11.3 DETERMINANTS OF WORK RETURNS EXPERIENCED BY YOUNG ADULTS

It was noted earlier in Chapter 5 that higher returns along one dimension tended to be associated[3] with similarly high levels along others; persons tended to be satisfied with all aspects of their job or to experience meager returns along all dimensions. Yet correlations were far from perfect and it is to be expected that the major determinants of returns to work will differ at least somewhat across the six outcomes. Because each of the six dimensions is conceptually distinct we have chosen to begin by considering each of the returns domains separately.[4] Following a synthesis of these results, we employ, in the final section, a multivariate framework which also takes account of the relations among returns. The determinants of each outcome will be compared across four subgroups of young adults (the reasoning behind these specific comparison groups was discussed in the introduction to this chapter): (1) all youth employed at least 20 hours per week (n=504); (2) all youth employed full-time, 35 or more hours a week (n=426); (3) all youth employed at least 20 hours a week who were not, at the time of the survey, enrolled, either part- or full-time, in college (n=357); (4) youth employed at least 20 hours a week who were attending college, again either part- or full-time (n=147).

We first present the adjusted coefficients of determination (Table 11.3.1) to assess overall differences in the model's explanatory power across these worker groups. The variables isolated as predictors of job returns are about equally as effective in explaining service and

Table 11.3.1 Differential Efficacy of the Model for the Determination of Work Returns According to Sample and Outcome

	UNADJUSTED R^2				ADJUSTED R^2			
OUTCOME	ALL PERSONS (A) N=504	WORK $\geq$ 35 (B) N=426	NOT IN SCHOOL (C) N=357	IN SCHOOL (D) N=147	ALL PERSONS (A) N=504	WORK $\geq$ 35 (B) N=426	NOT IN SCHOOL (C) N=357	IN SCHOOL (D) N=147
EARNINGS	.301	.210	.145	.247	.275	.177	.103	.154
SERVICE	.229	.242	.220	.273	.201	.211	.181	.183
ENGAGEMENT	.231	.180	.154	.295	.203	.146	.112	.208
ASSOCIATES	.143	.136	.096	.209	.112	.100	.050	.112
POWER	.095	.073	.060	.32[illegible]	.061	.034	.013	.246
SINECURE	.072	.055	.075	.089	.038	.015	.029	-.023

associations returns from job incumbency for all groups. In the cases of the other three job returns, however, levels of explained variance differ quite substantially. The differences are particularly striking in the case of perceived opportunities to exercise power and responsibility on the job; almost a quarter of the variation in authority can be accounted for among youth enrolled in school whereas only about 5 percent of the variation is explicable for other groups of workers.

11.3.A. Earnings Returns to Work

The factors that contribute to the perception of high material benefits are similar (see Table 11.3.2) across all four sets of young workers. Within the most inclusive group -- all workers employed at least 20 hours a week -- the strongest effect is the depressant influence of achievement in high school; the higher the level of past academic performance the less satisfactory are extrinsic job rewards. This relationship is replicated (at the same level of importance, b's equal to -.400) within each of the other three groups of youth. In the models in which school enrollment was considered as a variable -- all workers and workers employed at least 35 hours a week -- college attendance depressed satisfaction with earnings. In two of the three models in which hours worked per week was included as a variable -- all workers, those not enrolled in college, and those enrolled in higher education -- the longer the work week the higher the youth's satisfaction with these extrinsic returns.

Table 11.3.2 Earnings Returns to Job Activities for Four Groups of AEQ Youth

SAMPLE[c]	SEX	RACE	ABIL63	ACHV63	HOURS[b] WORK	SCHOL[b] NOW	WORK R	WORK I	WORK A	WORK S	WORK E	WORK C	R^2	ADJ R^2
A.	.118	-.134	-.003	-.005*									.190[a]	.173
	(.057)	(-.040)	(-.086)	(-.378)										
	.117	-.137	-.003	-.004*	.026								.243	.226
	(.056)	(-.041)	(-.077)	(-.318)	(.243)									
	.207*	-.164	-.002	-.005*	.023		.011	.041*	-.001	-.018	-.010	.006	.275	.249
	(.099)	(-.049)	(-.053)	(-.353)	(.210)		(.039)	(.182)	(-.003)	(-.066)	(-.053)	(.030)		
	.088	-.091	-.002	-.004*	.014*	-.452*	.009	.042*	-.004	-.014	-.007	.004	.301	.275
	(.042)	(-.027)	(-.047)	(-.297)	(.128)	(-.210)	(.030)	(.185)	(-.008)	(-.054)	(-.034)	(.020)		
B.	.051	-.076	-.002	-.004*									.137[a]	.116
	(.026)	(-.024)	(-.078)	(-.336)										
	-.068	-.014	-.002	-.003*		-.508*							.175	.153
	(-.034)	(-.004)	(-.072)	(-.268)		(-.217)								
	.027	-.041	-.001	-.004*		-.512*	.011	.040*	-.009	-.011	-.007	-.004	.210	.177
	(.013)	(-.013)	(-.048)	(-.302)		(-.219)	(.042)	(.192)	(-.016)	(-.046)	(-.039)	(-.022)		
C.	-.096	-.019	-.002	-.004*									.096	.070
	(-.048)	(-.007)	(-.065)	(-.271)										
	-.079	-.039	-.002	-.003*	.013								.104	.075
	(-.039)	(-.01[illegible])	(-.067)	(-.262)	(.091)									
	.024	-.049	-.001	-.004*	.011		.018	.032*	.007	.001	-.015	.011	.145	.103
	(.012)	(-.017)	(-.046)	(-.291)	(.075)		(.069)	(.161)	(.016)	(.003)	(-.088)	(.062)		
D.	.041	-.181	-.004	-.004*									.131	.074
	(.021)	(-.055)	(-.106)	(-.281)										
	.128	-.191	-.003	-.004*	.021*								.178	.117
	(.065)	(-.059)	(-.091)	(-.266)	(.238)									
	.208	-.191	-.003	-.004*	.016*		-.009	.063*	-.100	-.040	.007	-.008	.247	.154
	(.105)	(-.059)	(-.073)	(-.305)	(.178)		(-.033)	(.281)	(-.115)	(-.143)	(.042)	(-.038)		

---

[a] These R^2's include school dummy variable main effects.

[b] See note a, Table 11.4.2.

*Significant at $\alpha \leq .05$; standardized coefficients in parentheses.

[c] A=all persons, n=504 B=full-time, n=426 C=workers not in school, n=357 D=workers in college, n=147

The fact that labor supply was not significantly related to earnings satisfaction among the terminal high school graduates strikes us as quite plausible. College students work, on the average, less than do non-college youth (means of 30 and 40 hours, respectively -- see Table A.2), but evidence markedly more variation in weekly job commitment (standard deviations of 11 and 6, respectively). College enrollment,therefore, probably contributes to dissatisfaction with pay due to higher expectations as well as through generally shorter work weeks and thus, most likely, smaller pay checks. Hours worked per week do not predict satisfaction for youth not in college probably because these workers all tend to be near the upper limit of the normal work week.

College enrollment status, the number of hours worked weekly, and achievement in high school all impact upon earnings satisfaction independent of the particulars of the actual job situation. On the other hand, the type of job itself has only modest effects on these returns. However, one specific type of work does stand out as enhancing extrinsic returns for all groups of youthful workers. Participation in Investigative type pursuits at the workplace increases satisfaction with pecuniary returns to work. To the degree that we are validly tapping Investigative, albeit low-level, pursuits, this result is consistent with past work (Gottfredson, 1978b).

11.3.B. Social Service Returns to Work

Whereas work routines had little impact upon earnings satisfaction, routines, sex, and achievement are all major determinants of the levels of social service returns from work. The importance of these effects do, however, differ across groups of workers.

When all youth employed at least 20 hours a week are considered (Table 11.3.3), the single most important effect upon social service returns follows from Social routines (β=.25). At a lower absolute level of importance Investigative and Enterprising routines also enhance such gratification, while participation in Conventional job tasks depresses feelings of social service. Youth with higher past achievement in school experience reduced service satisfaction, whereas females are more likely to report higher service benefits from work.

If the target sample is restricted to full-time (35 or more hours a week) workers, the determinants of satisfaction with social service work returns are largely unchanged. Social, Enterprising, and Investigative routines enhance satisfaction; women report higher levels of social service returns, and higher achievers in senior high school report lower levels. However, when workers are split into two groups according to their college student status, the pattern of determinants changes.

Among terminal high school graduates, feelings of social service accrue more to persons engaged in Social routines on the job and to females. Other influences previously noted -- achievement and other types of activities -- are inconsequential for these youth. However, Social routines are not important among college students; rather Investigative work routines enhance social service returns and Conventional task performance depresses such benefits. Sex is absolutely more important (b=

Table 11.3.3 Social Service Returns to Job Activities for Four Groups of AEQ Youth

SAMPLE[c]	SEX	RACE	ABIL63	ACHV63	HOURS[b] WORK	SCHOL[b] NOW	WORK R	WORK I	WORK A	WORK S	WORK E	WORK C	R^2	ADJ R^2
A.[c]	.477*	-.076	.001	-.004*									.102	.083
	(.180)	(-.018)	(.017)	(-.220)										
	.477*	-.076	.001	-.004*	-.001								.102	.082
	(.180)	(-.018)	(.017)	(-.221)	(-.009)									
	.509*	-.153	.001	-.004*	-.007		-.021	.044*	.041	.085*	.020*	-.028*	.227	.200
	(.192)	(-.036)	(.013)	(-.231)	(-.049)		(-.057)	(.153)	(.058)	(.250)	(.089)	(-.112)		
	.467*	-.127	.001	-.004*	-.010	-.161	-.022	.044*	.040	.086*	.022*	-.029*	.229	.201
	(.176)	(-.030)	(.015)	(-.215)	(-.073)	(-.059)	(-.059)	(.154)	(.056)	(.253)	(.095)	(-.115)		
B.	.498*	.001	.001	-.004*									.096	.074
	(.187)	(.000)	(.023)	(-.211)										
	.491*	.004	.001	-.004*		-.029							.096	.072
	(.185)	(.001)	(.024)	(-.208)		(-.009)								
	.513*	-.024	.001	-.003*		-.171	-.011	.028*	.021	.100*	.028*	-.022	.242	.211
	(.193)	(-.006)	(.014)	(-.196)		(-.055)	(-.030)	(.102)	(.028)	(.303)	(.120)	(-.088)		
C.	.472*	.019	.002	-.003*									.071	.044
	(.172)	(.005)	(.051)	(-.178)										
	.468*	.023	.002	-.003*	-.003								.071	.041
	(.171)	(.006)	(.051)	(-.179)	(-.015)									
	.388*	-.051	.001	-.003	-.012		-.019	.015	.035	.108*	.018	-.018	.220	.181
	(.142)	(-.013)	(.023)	(-.171)	(-.062)		(-.053)	(.054)	(.054)	(.345)	(.079)	(-.076)		
D.	.467*	-.384	-.003	-.005*									.126	.069
	(.172)	(-.086)	(-.053)	(-.256)										
	.449*	-.382	-.003	-.005*	-.004								.127	.063
	(.165)	(-.085)	(-.055)	(-.258)	(-.035)									
	.645*	-.316	-.002	-.005*	-.016		-.030	.114*	.088	.041	.020	-.058*	.273	.183
	(.237)	(-.071)	(-.033)	(-.254)	(-.132)		(-.082)	(.372)	(.073)	(.106)	(.088)	(-.201)		

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[a] These R^2's include school dummy variable main effects.

[b] See note a, Table 11.4.2.

*Significant at $\alpha \leq .05$; standardized coefficients in parentheses.

[c] A=all persons, n=504 B=full-time, n=426 C=workers not in school, n=357 D=workers in college, n=147

.645 versus .388) in the sample of students, with men tending to realize fewer service benefits from their work.

Theory would suggest that Social tasks at work would enhance feelings of societal service. This set of results is most clearly evidenced among the terminal high school graduates, although it does appear for the full-time worker sample as well as for the combined group of employed (20 hours or more) youth. However, among college youth Investigative work replaces Social work as the major contributor to feelings of social satisfaction. This result appears contradictory to expectations, especially given the implicit inclusion of a period of college attendance in the developmental career decision-making time-table advanced by vocational theory (see Chapters 1, above, and 12, below). It appears, then, that the work experience of workers who are also college students is not typical in its routines-rewards linkages.

11.3.C. Engagement Returns to Work

Satisfaction deriving from engagement in the actual routines or tasks undertaken on the job -- whether the work is interesting, challenging, varied, etc. -- is determined similarly for all the subgroups of employed youth. Moreover, the pattern of determinants that emerges is consistent with theoretical expectations (see Table 11.3.4). Investigative work routines are the single most important influence on this form of intrinsic satisfaction for all groups except the subsample of college-goers. Realistic work also significantly enhances this aspect of job satisfaction.

Table 11.3.4 Engagement with the Routines of Job Activity for Four Groups of AEQ Youth

SAMPLE[c]	SEX	RACE	ABIL63	ACHV63	HOURS[b] WORK	SCHOL[b] NOW	WORK R	WORK I	WORK A	WORK S	WORK E	WORK C	R^2	ADJ R^2
A.[c]	.275*	-.295	-.005*	-.002*									.107	.089
	(.130)	(-.088)	(-.143)	(-.154)										
	.274*	-.297	-.005*	-.002*	.020*								.137	.118
	(.130)	(-.088)	(-.136)	(-.115)	(.181)									
	.494*	-.364*	-.004*	-.002*	.013*		.036*	.055*	.043	.008	-.001	.003	.226	.199
	(.235)	(-.108)	(-.108)	(-.154)	(.121)		(.122)	(.243)	(.075)	(.028)	(-.004)	(.014)		
	.440*	-.330*	-.004*	-.002*	.009	-.207	.034*	.055*	.041	.009	.001	.002	.231	.203
	(.209)	(-.098)	(-.105)	(-.129)	(.083)	(-.095)	(.118)	(.244)	(.073)	(.034)	(.004)	(.010)		
B.	.193*	-.240	-.004*	-.002*									.078	.056
	(.096)	(-.076)	(-.148)	(-.118)										
	.153	-.219	-.004*	-.001		-.168							.082	.058
	(.076)	(-.069)	(-.146)	(-.095)		(-.071)								
	.416*	-.259	-.004*	-.002*		-.218	.040*	.050*	.021	.013	.009	-.003	.180	.146
	(.207)	(-.082)	(-.119)	(-.124)		(-.092)	(.149)	(.240)	(.037)	(.052)	(.051)	(-.018)		
C.	.108	-.230	-.005*	-.001									.058	.031
	(.051)	(-.070)	(-.158)	(-.046)										
	.120	-.243	-.005*	-.001	.008								.061	.032
	(.056)	(-.078)	(-.160)	(-.041)	(.057)									
	.404*	-.286	-.004*	-.001	.004		.052*	.041*	.035	.017	.001	-.001	.154	.112
	(.190)	(-.092)	(-.142)	(-.060)	(.025)		(.183)	(.196)	(.076)	(.070)	(.007)	(-.006)		
D.	.282	-.400	-.004	-.003*									.120	.062
	(.132)	(-.114)	(-.090)	(-.215)										
	.364*	-.411	-.003	-.003*	.020*								.156	.094
	(.171)	(-.117)	(-.077)	(-.202)	(.210)									
	.500*	-.650	-.001	-.004*	.007		.001	.093*	.064	-.004	-.005	.020	.295	.208
	(.235)	(-.185)	(-.034)	(-.279)	(.080)		(.004)	(.386)	(.068)	(-.012)	(-.027)	(.090)		

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[a] These R^2's include school dummy variable main effects.

[b] See note a, Table 11.4.2.

*Significant at $\alpha \leq .05$; standardized coefficients in parentheses.

[c] A=all persons, n=504   B=full-time, n=426   C=workers not in school, n=357   D=workers in college, n=147.

These are two types of work in which the task activity is important itself and is product-oriented, the first involving "data" and "ideas," the second "things." This contrasts with Enterprising and Social work, both of which are more "people-oriented" and typically are not associated with a production/creation process, and with Conventional work, which tends to be more routinized and more process than product oriented.

In general, females find the actual routines of work more satisfying or engaging than do males only after type of work has been controlled. Again, higher ability and higher achievement in high school depress perceptions of challenge and variety in one's work routines. Both negative influences operate among all workers and full-time workers. When the sample is split on college enrollment status, however, some minor differences do show up. For non-college goers, ability evidences the major depressant effect, while for college goers the impact of achievement is more important.[6]

11.3.D. Associations Returns to Work

Theory would suggest that Social and Enterprising types of occupations should be more interpersonally rewarding, whereas associations should be less important in Investigative work, except perhaps for collegiality in higher level positions. Among all groups of youth, however, the only occupational type which significantly affects associational satisfaction is Investigative work (see Table 11.3.5). Sex and achievement are strongly related to satisfaction with personal associations for most worker groups,

Table 11.3.5 Association Returns to Job Activity for Four Groups of AEQ Youth

SAMPLE	SEX	RACE	ABIL63	ACHV63	HOURS[b] WORK	SCHOL[b] NOW	WORK R	WORK I	WORK A	WORK S	WORK E	WORK C	R^2	ADJ R^2
A.[c]	.391*	-.348*	-.002	-.002*									.109	.091
	(.208)	(-.116)	(-.065)	(-.168)										
	.390*	-.348*	-.002	-.002*	.008								.114	.095
	(.208)	(-.116)	(-.062)	(-.151)	(.079)									
	.464*	-.322*	-.001	-.002*	.006		.007	.033*	-.022	-.023	.013	-.001	.141	.111
	(.247)	(-.108)	(-.043)	(-.185)	(.064)		(.025)	(.161)	(-.044)	(-.095)	(.079)	(-.007)		
	.430*	-.302*	-.001	-.002*	.004	-.126	.006	.033*	-.023	-.022	.014	-.002	.143	.112
	(.229)	(-.101)	(-.041)	(-.167)	(.038)	(-.065)	(.024)	(.161)	(-.045)	(-.091)	(.085)	(-.010)		
B.	.365*	-.342*	-.002	-.002*									.106	.085
	(.193)	(-.115)	(-.071)	(-.159)										
	.341*	-.329*	-.002	-.002*		-.104							.108	.085
	(.180)	(-.111)	(-.069)	(-.144)		(-.047)								
	.460*	-.300	-.001	-.002*		-.141	.014	.030*	-.025	-.017	.017*	-.009	.136	.100
	(.244)	(-.101)	(-.051)	(-.168)		(-.063)	(.058)	(.153)	(-.048)	(-.073)	(.106)	(-.050)		
C.	.303*	-.263	-.001	-.001									.074	.047
	(.153)	(-.090)	(-.047)	(-.112)										
	.306*	-.265	-.001	-.001	.002								.074	.044
	(.154)	(-.091)	(-.047)	(-.111)	(.012)									
	.442*	-.260	-.001	-.002*	.000		.024	.024	-.024	-.006	.005	-.002	.096	.050
	(.223)	(-.089)	(-.031)	(-.132)	(.001)		(.092)	(.124)	(-.056)	(-.028)	(.032)	(-.015)		
D.	.448*	-.520	-.004	-.002									.113	.055
	(.249)	(-.176)	(-.176)	(-.154)										
	.488*	-.525	-.003	-.002	.010								.125	.061
	(.271)	(-.177)	(-.099)	(-.146)	(.120)									
	.442*	-.429	-.003	-.002	.006		-.030	.051*	-.015	-.048	.023	.006	.209	.112
	(.246)	(-.145)	(-.087)	(-.174)	(.077)		(-.126)	(.249)	(-.019)	(-.188)	(.159)	(.029)		

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[a] These R^2's include school dummy variable main effects.

[b] See note a, Table 11.4.2.

*Significant at $\alpha \leq .05$; standardized coefficients in parentheses.

[c] A=all persons, n=504 B=full-time, n=426 C=workers not in school, n=357 D=workers in college, n=147.

while type of work associations (especially Investigative) exerts a secondary influence for all but the non-college goers.[7]

11.3.E. Power Returns to Work

Considering all employed youth (Table 11.3.6), past academic performance registers the largest single impact on perceptions of responsibility at the workplace, modestly depressing satisfaction with the power returns to job incumbency. Participation in Social and Investigative routines enhances satisfaction with responsibility as would be expected, and a slight positive impact is associated with longer work weeks. Among full-time workers, achievement and participation in Social tasks are the sole significant determinants of satisfaction with autonomy, and their effects are almost identical (compare raw coefficients) with those evidenced among all workers. However, when youth are divided according to their college status (note the lack of a main effect for school enrollment in the first two subgroups), marked differences in determinants of satisfaction result. Nothing included in our model predicts satisfaction with work responsibility among terminal high school graduates. However, among college goers, almost a quarter of the variation in this outcome is explained (adjusted R^2). Past achievement depresses this aspect of job satisfaction, and participation in Social and Investigative pursuits on the job enhances perceptions of autonomy. These effects (raw coefficients) are all approximately twice as large as those evidenced for all workers (20 hours or more a week) combined. Finally, a marked racial effect is

Table 11.3.6 Power Returns to Job Activity for Four Groups of AEQ Youth

SAMPLE[c]	SEX	RACE	ABIL63	ACHV63	HOURS[b] WORK	SCHOL[b] NOW	WORK R	WORK I	WORK A	WORK S	WORK E	WORK C	R^2	ADJ R^2
A.[c]	-.015	-.062	-.001	-.002*									.032	.013
	(-.025)	(-.020)	(-.025)	(-.147)										
	-.016	-.063	-.001	-.002*	.013*								.046	.025
	(-.008)	(-.020)	(-.021)	(-.120)	(.126)									
	.000	-.107	-.001	-.002*	.010*		-.002	.022*	.028	.033*	.009	.002	.094	.063
	(.000)	(-.034)	(-.021)	(-.139)	(.098)		(-.009)	(.101)	(.052)	(.131)	(.055)	(.012)		
	.019	-.119	-.001	-.002*	.011*	.072	-.002	.021*	.028	.032*	.009	.003	.095	.061
	(.010)	(-.038)	(-.022)	(-.148)	(.112)	(.036)	(-.008)	(.101)	(.053)	(.129)	(.051)	(.014)		
B.	-.076	-.087	-.001	-.001*									.024	.001
	(-.038)	(-.028)	(-.020)	(-.115)										
	-.041	-.106	-.001	-.002*		.150							.028	.002
	(-.020)	(-.033)	(-.022)	(-.135)		(.064)								
	-.001	-.116	-.001	-.002*		.093	.005	.017	.001	.034*	.012	.002	.073	.034
	(-.001)	(-.037)	(-.021)	(-.143)		(.040)	(.021)	(.080)	(.001)	(.138)	(.068)	(.009)		
C.	-.113	-.035	-.001	-.001									.030	.002
	(-.053)	(-.011)	(-.045)	(-.077)										
	-.099	-.051	-.002	-.001	.010								.034	.004
	(-.046)	(-.016)	(-.047)	(-.071)	(.068)									
	-.062	-.076	-.002	-.001	.008		.006	.008	.028	.025	.012	-.003	.060	.013
	(-.029)	(-.024)	(-.056)	(-.071)	(.056)		(.022)	(.038)	(.058)	(.100)	(.066)	(-.018)		
D.	.065	-.260	.001	-.004*									.114	.055
	(.035)	(-.085)	(.042)	(-.303)										
	.133	-.269	.002	-.004*	.016*								.146	.083
	(.072)	(-.088)	(.054)	(-.347)	(.199)									
	.078	-.614*	.003	-.004*	.006		-.034	.061*	.001	.061*	.001	.029	.329	.246
	(.042)	(-.201)	(.092)	(-.347)	(.072)		(-.136)	(.291)	(.001)	(.233)	(.009)	(.146)		

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[a] These R^2's include school dummy variable main effects.

[b] See note a, Table 11.4.2.

*Significant at $\alpha \leq .05$; standardized coefficients in parentheses.

[c] A=all persons, n=504 B=full-time, n=426 C=workers not in school, n=357 D=workers in college, n=147.

Table 11.3.7 Sinecure Returns to Job Activity for Four Groups of A[illegible]Q Youth

SAMPLE	SEX	RACE	ABIL63	ACHV63	HOURS[b] WORK	SCHOL[b] NOW	WORK R	WORK I	WORK A	WORK S	WORK E	WORK C	R^2[a]	ADJ R^2
A.[c]	.041	.267	-.001	.000									.026	.006
	(.019)	(.079)	(-.038)	(.006)										
	.042	.270	-.002	-.000	-.019*								.054	.033
	(.020)	(.080)	(-.044)	(-.032)	(-.177)									
	-.009	.280	-.002	-.000	-.017*		-.004	-.017	.038	-.014	-.004	.009	.070	.037
	(-.004)	(.083)	(-.051)	(-.020)	(-.156)		(-.015)	(-.072)	(.066)	(-.052)	(-.023)	(.046)		
	.030	.257	-.002	-.001	-.014*	.145	-.004	-.017	.038	-.015	-.005	.010	.072	.038
	(.014)	(.076)	(-.053)	(-.038)	(-.130)	(.006)	(-.012)	(-.073)	(.068)	(-.056)	(-.029)	(.049)		
B.	-.004	.310	-.002	-.000									.029	.006
	(-.002)	(.093)	(-.047)	(-.036)										
	.023	.297	-.002	-.001		.112							.031	.005
	(.011)	(.089)	(-.048)	(-.050)		(.045)								
	-.068	.313	-.002	-.001		.140	-.009	-.018	.021	-.021	-.003	.018	.055	.015
	(-.032)	(.093)	(-.054)	(-.052)		(.056)	(-.031)	(-.080)	(.036)	(-.078)	(-.019)	(.090)		
C.	.029	.254	-.002	-.001									.032	.004
	(.012)	(.075)	(-.047)	(-.047)										
	.006	.280	-.002	-.001	-.017								.043	.012
	(.002)	(.082)	(-.044)	(-.057)	(-.105)									
	-.074	.280	-.002	-.001	-.013		-.015	-.018	.051	-.022	-.008	.010	.075	.029
	(-.032)	(.083)	(-.048)	(-.046)	(-.077)		(-.049)	(-.079)	(.100)	(-.084)	(-.042)	(.049)		
D.	.284	.189	-.002	.000									.067	.006
	(.140)	(.057)	(-.041)	(.006)										
	.227	.196	-.002	-.000	-.014								.086	.019
	(.112)	(.059)	(-.051)	(-.004)	(-.152)									
	.199	.145	-.002	-.000	-.013		-.001	-.006	-.041	.007	-.001	.007	.089	-.023
	(.099)	(.044)	(-.049)	(-.008)	(-.151)		(-.003)	(-.028)	(-.045)	(.025)	(-.006)	(.033)		

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[a] These R^2's include school dummy variable main effects.

[b] See note a, Table 11.4.2.

*Significant at $\alpha \leq .05$; standardized coefficients in parentheses.

[c] A=all persons, n=504 B=full-time, n=426 C=workers not in school, n=357 D=workers in college, n=147.

evidenced among college goers. Blacks are significantly less satisfied with the responsibility accruing to them on the job than are whites. The additive effects of race and past achievement indicate that the most able blacks are distinctly dissatisfied with their power returns to work.

11.4 RELATIVE IMPACTS OF BACKGROUND, ACHIEVEMENT, AND WORK ROUTINE CHARACTERISTICS ON JOB RETURNS

The two most pervasive determinants of all job returns documented above are prior high school achievement and sex (see Table 11.4.1). Achievement registers the largest (absolute value standardized coefficient) or second largest effect in fourteen of the twenty structural equations estimated, and registers a significant impact in two others. We cannot, of course, conclude that youth who have performed better in high school are routinely paid less, shunned by their associates, disliked by their bosses, assigned less responsibility, given less challenging work, or placed in jobs with no redeeming social value. Nor can we conclude that these youth as a matter of course deem all work routines unimportant or irrelevant. If anything, when ability and background are controlled, these youth should be more industrious and conforming to work schedules, that is, better socialized to their worker roles than their peers who did not achieve so well in school (Bowles and Gintis, 1976). Therefore, it should be expected that these youth would receive greater rather than lesser returns to their work. The fact that achievement was seen to negatively impact on all returns to work leads us to two conclusions. First, youth are responding

Table 11.4.1 Significant Determinants of Work Returns (Rank Ordered by Size of Standardized Coefficients) Across Four Samples of Employed Youth

SAMPLE	RETURNS TO WORK				
	EARNS-R	SERVE-R	ENGAG-R	ASSOC-R	POWER-R
A. ALL PERSONS EMPLOYED 20 HRS/WK.	ACHIEV (-)	WORK-S	WORK-I	SEX	ACHIEV (-)
	SCHOOL (-)	ACHIEV (-)	SEX	ACHIEV (-)	WORK-S
	WORK-I	SEX	ACHIEV (-)	WORK-I	WORK-I
	HRWORK	WORK-I	WORK-R	RACE (-)	HRWORK
		WORK-C (-)	ABILITY (-)		
		WORK-E	RACE (-)		
B. ALL PERSONS EMPLOYED 35+ HRS/WK.	ACHIEV (-)	WORK-S	WORK-I	SEX	ACHIEV (-)
	SCHOOL (-)	ACHIEV (-)	SEX	ACHIEV (-)	WORK-S
	WORK-I	SEX	WORK-R	WORK-I	
		WORK-E	ACHIEV (-)	WORK-E	
		WORK-I	ABILITY (-)		
C. ALL PERSONS EMPLOYED 20+ HRS/WK. NOT IN SCHOOL	ACHIEV (-)	WORK-S	WORK-I	SEX	
	WORK-I	SEX	SEX	ACHIEV (-)	
			WORK-R		
			ABILITY (-)		
D. ALL PERSONS EMPLOYED 20+ HRS/WK. IN COLLEGE	ACHIEV (-)	WORK-I	WORK-I	WORK-I	ACHIEV (-)
	WORK-I	ACHIEV (-)	ACHIEV (-)	SEX	WORK-I
	HRWORK	SEX	SEX		WORK-S
		WORK-C (-)			RACE (-)

to the questions regarding work returns in relative terms, that is satisfaction relative to their expectations (see Section 5.1 where the issue of the face validity of the returns items was questioned). Second, these more able, industrious, and/or task oriented youth are negatively responding to the general job characteristics of the low level positions in which young workers usually find themselves. Their higher performance, and probably other rewards derivative therefrom (e.g., grades, approval by teachers, recognition by peers, etc.), in high school led them to anticipate at least equal, and probably greater, success in the workplace in the form of extrinsic rewards, similarly-oriented fellow workers, challenging work, and the like. When the rewards do not match their expectations their satisfaction with all aspects of the job is lowered. Such conclusions echo the general finding in the literature (e.g., Kalleberg, 1974; Wilensky, 1964; but see Wright and Hamilton, 1979, for an exception) that more highly educated workers tend to be less satisfied with their jobs.[8]

Interestingly, females are not disadvantaged relative to males with regard to two important work returns -- earnings and power or responsibility, where disparities might reasonably be expected. Even in a labor market in which male workers overall are more likely to receive higher pay and more autonomy, when occupational routines are held constant the low level positions in which these youth were employed probably were too homogenous to support appreciable gender-based inequality. However, along the other three dimensions of job returns, women consistently were more highly satisfied with the jobs than were men. They felt that their work was more socially beneficial, was more challenging, more interesting and varied and that their fellow workers and superiors were better people to work with than did their young male counterparts. We have no way of determining whether, in fact, their jobs were better than those held by males or whether their expectations[9] for work returns were lower and thus more easily met. Nonetheless, females experienced consistently higher job satisfaction on intrinsic returns dimensions than did their male peers during their first several years in the labor market and were not notably deprived on extrinsic criteria. It would be enlightening to investigate whether these entry-level advantages experienced by young women also have been realized by more recent worker cohorts. If females presently are not so advantaged, we might conclude not that the average entry-level position of young women deteriorated but, rather, that expectations for their labor market experiences have risen.

Of all occupational types, Investigative work evidenced the most pervasive effects on job returns. Specifically, by comparison, Realistic work enhanced only satisfaction with engagement in the routines of work themselves among all but college-going workers. Conventional activities depressed feelings of social service for college-goers as well as the entire employed (20 hours or more a week) sample. Social routines enhanced feelings of social service for all workers except college students and contributed to feelings of satisfaction with responsibility on the job for all persons except those not enrolled in college. Finally, Enterprising pursuits enhanced feelings of service benefits among full-time workers as well as among all employed youth, although when these youth were split by educational activity the latter relationship disappeared.

A second outcome fostered by Enterprising activities on the job, at least among full-time workers, was satisfaction with personal associations at the workplace. By contrast, the positive impact of Investigative work was significant in 16 of the 20 equations estimated; all outcomes were enhanced by this type of occupational activity for some group of youth, and all groups of youth experienced a positive increment from Investigative activity along some return dimension. To simplify our discussion of these impacts, we will focus on the two exhaustive and mutually exclusive worker groups defined by schooling status.

Investigative undertakings registered the strongest (standardized coefficient) positive impact of any predetermined variable on all five dimensions of work returns for workers who were continuing their education. Along only two of the dimensions, satisfaction with extrinsic returns and power or responsibility on the job, was this effect surpassed in absolute value, both times by the negative impact of past high school achievement. Among non-college workers, however, the influence of participation in Investigative routines was markedly reduced. In only two instances, the determination of earnings returns and satisfaction with actual work routines, did it register significant impacts. In the latter equation it ranked first among all independent variables (by absolute size of the standardized coefficients) and in the former it was second only to achievement.

Investigative work is perhaps the most prestigious, most highly paid, and most dependent upon advanced educational credentials of all of the six types of work considered by Holland. It is, therefore, not surprising that this sort of occupational activity should be more influential for the job satisfaction of workers who are attending college than it is for terminal high school graduates. The items included in our Investigative scale (refer back to Table 5.2.1) probably tap largely low level technical or research positions. The means and standard deviations for two of the four Investigative items ranked in the second half of their respective distributions, meaning that, overall, they were relatively scarce and pretty uniformly so. The other two had higher means, but also larger standard deviations. The four activities (with the ranks of the mean and standard deviation in parentheses) were the following: (1) WORK12-- conducted a chemical or lab test (58,58); (2) WORK28-- read several pages or more of material connected with the job (11,19); (3) WORK30-- looked up technical information in a book (20,11); (4) WORK60-- read a technical or schematic drawing or blueprint (40,30). Both theory and common sense suggest that this sort of work would contribute to interest in routines (ENGAG-R), responsibility or autonomy (POWER-R), extrinsic rewards (EARNS-R), and, to the degree that the technical activities involved social service, social benefits (SERVE-R). It is somewhat unexpected, though, that, for employed college youth, these activities also generally enhance feelings of satisfaction with fellow workers and supervisors (ASSOC-R).

In terms of ascribed characteristics, sex had major ramifications for a youth's job satisfaction, but race, another extremely salient ascribed personal attribute, had little bearing upon satisfaction with job returns. Two marginal significant disadvantages accrued to blacks when all workers employed at least 20 hours a week were considered as a group

-- these involved satisfaction with job routines and personal associations at the workplace. When the sample was divided in any manner these effects disappeared. It was noteworthy, however, to observe that a moderately strong disadvantage accrued to black college youth in experiencing satisfaction with their autonomy at work.[10] The period around 1968 was a time when blacks generally were struggling for civil rights and economic equity. It is reasonable that such social movements should also promote the desire to share broadly in the gratifications that might be realized in the workplace, including not only material well-being and job security, but opportunities to assume positions of increased responsibility as well. College attendance and high school achievement probably also lead to expectations for greater personal responsibility and autonomy as a worker. However, these data indicate that it is precisely the more able and aspiring blacks who feel a lack of job autonomy and who are dissatisfied with interpersonal relations at work.[11]

Additionally, it should be noted that school enrollment per se, considered as a linear additive component in the generation of job returns, had little effect on these returns outcomes, influencing only extrinsic satisfaction to the detriment of college youth. However, when the sample was divided into two groups according to school enrollment status slight differences in the determinants of satisfaction with actual work routines (ENGAG-R) and workplace associations (ASSOC-R) were noticed, and quite marked differences were evident with regard to feelings of satisfaction with both the social service and responsibility returns to work.

The content of the youths' positions was at least as influential in the determination of many job returns as were the various ascribed and achieved characteristics examined -- such as parental status, sex, race, achievement in high school, and college enrollment. Table 11.4.2 presents approximate absolute net increments to explained variance resulting from the successive inclusion in these prediction equations of background, job primacy (hours worked and school enrollment status), and occupational activity indicators (see note a, Table 11.4.2). Although routines were of some importance for satisfaction with earnings and personal associations at the workplace, their net contribution to explained variance was less than that from demographic and achievement variables. However, in the determination of the other returns to work the net impact of routines equaled or surpassed that of other factors. In determining satisfaction with work routines and social service benefits of the job, activities were more important relative to background characteristics among terminal high school graduates than among college students; whereas the reverse was the case with regard to responsibility returns.

Along each of the five rewards dimensions (see Table A.2) terminal high school graduates were more satisfied with their jobs than were college students. The former were, furthermore, consistently more homogenous in their perceptions of returns than were the college-going workers. It would be as ludicrous, however, to counsel youth to forego higher education or to lower their high school performance in order to increase their later work satisfaction as it would be to advise them to alter their sex or race. Clearly, slightly less drastic solutions are necessary. For example, recognizing that females are slightly advantaged along several dimensions (or at least were ten years ago), terminal high school graduates might be

Table 11.4.2 Approximate Absolute Increments in Unadjusted Coefficients of Determination due to Inclusion of Selected Blocks of Predictors, for All Returns Across Four Groups of Employed Youth (expressed as percent)

	INDEPENDENT VARIABLES				
	Background & School Dummies	Hours[a] Worked	Routines	Now in[a] School	Total R^2
1. Earnings					
All Youth	19.0%	5.0%	3.0%	2.5%	.301
Full-time workers	13.5%		3.5%	4.0%	.210
Terminal Education	9.5%	1.0%	4.0%		.145
College Students	13.0%	4.5%	7.0%		.247
2. Social Service					
All Youth	10.0%	0.0%	13.0%	0.0%	.229
Full-time workers	9.5%		14.5%	0.0%	.242
Terminal Education	7.0%	0.0%	15.0%		.220
College Students	12.5%	0.0%	14.5%		.273
3. Engagement					
All Youth	10.5%	3.0%	9.0%	0.0%	.231
Full-time workers	8.0%		10.0%	0.0%	.180
Terminal Education	6.0%	0.0%	9.0%		.154
College Students	12.0%	3.5%	14.0%		.295
4. Associations					
All Youth	11.0%	0.5%	2.5%	0.0%	.143
Full-time workers	10.5%		3.0%	0.0%	.136
Terminal Education	7.5%	0.0%	2.0%		.096
College Students	11.5%	1.0%	7.5%		.209
5. Power					
All Youth	3.0%	1.0%	5.0%	0.0%	.095
Full-time workers	2.5%		4.5%	0.0%	.073
Terminal Education	3.0%	0.0%	2.5%		.060
College Students	11.5%	3.0%	18.0%		.329

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[a] When both hours worked per week and school enrollment status were included in the model (only sample "A," all youth), schooling status was the last variable controlled. In all other samples where one or the other variable was included, it was entered immediately after the background indicators.

encouraged to look for Social or Investigative sorts of low-level entry jobs, or possibly Realistic work, in order to gain more opportunity to realize satisfaction on the job. Youth continuing to college might be counselled to likewise seek Investigative positions. These youth might also be forewarned about the realities of low-level positions and the levels of returns that are to be expected; if the realities cannot be changed, the preferable alternative, perhaps lowered initial expectations can contribute to increased satisfaction during the transition years of entry into the labor market. It is clear, though, that social background characteristics and ability differentials do not dictate inevitably feelings of satisfaction from job activity. Moreover the actual routines of work do affect these reactions. Youth would benefit from a better understanding of the actual activities involved in various occupations. Job titles may attract or repel youth, but the psychological gratification from work will be affected by day-to-day routines, and these are probably less appreciated than are an occupation's general social standing and its public image.

11.5 A BRIEF NOTE ON INTERESTS AND ROUTINES AS DETERMINANTS OF JOB RETURNS

Earlier (Section 11.1 and Table 11.1.1) we observed that adolescents' manifest interests did have moderate, if quite selective, consequences for at least some of the dimensions of occupational reward considered in this analysis. We also have seen that interests have some influence, albeit not much, on the sorts of routines performed at work (Chapter 10)

Table 11.5.1 The Mediation of Eleventh Grade Manifest Interest Effects on Work Rewards Through Work Routines (N = 417)[a]

Outcome	INVE11	ARTS11	ENTR11	CONV11	R^2
EARNS-R		-.226[b] (-.197)			.292 (.330)
ENGAG-R	.238 (.153)	.282 (.276)		-.163 (-.151)	.165 (.234)
POWER-R			-.185 (-.182)	-.146 (-.138)	.097 (.137)
SINEC-R	.230 (.271)				.112 (.123)

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[a] The upper figure from each pair is taken from the structural equations of Table 11.1.1. These are the significant interest effects on work rewards. Interest and reward dimensions not included in this table either had no influence on rewards or were unaffected by interests. The second figure in each pair is the coefficient obtained when the six routines dimensions are added to the equations from which the first entry derived.

[b] The ARTS11 effect in Table 11.1.1 was significant before controls for In School and Hours Work.

and that routines themselves are differentially rewarded (Sections 11.3 and 11.4). We thus might ask whether the influence of interests on rewards follows from the successful matching of interests with activities and the unequal rewards that attach to different work routines. This follows reasonably from both developmental and "person-environment" perspectives in vocational psychology. Interests "seek out" compatible routines and work is most gratifying when the activity structure of the job environment mirrors the personality dispositions of workers.

Although such expectations are plausible, they find little support in these data. Table 11.5.1 reproduces the significant manifest interest effects on occupational rewards from Table 11.1.1 and reports corresponding coefficients obtained when the work routines measures are added to the original equations. In only one instance is the interest effect appreciably reduced when work routines are controlled. This is the effect of Investigative interests on engagement in work. For the other six coefficients, the consequences of controlling on job activities are negligible. Thus, to the extent that adolescent interests do affect later occupational rewards, they do so almost entirely independent of any consequences they might have for the sorts of routines engaged in at work.

11.6 THE PATTERNING OF WORK REWARDS

In the concluding analysis section of Chapter 10 we observed some patterning of occupational routines that had not been revealed in the separate consideration of each activity dimension. The canonical analyses thus proved informative, even though the average correlation between occupational activity domains was only about .14. The corresponding average for the several rewards of work considered in this chapter is substantially greater, at .425. We next consider patterns of occupational reward, and how these are affected, first, by adolescent manifest interests, second, by occupational routines, and, finally, by background characteristics, interests and routines together. Canonical correlation analysis is used again to identify the dimensional structure of work rewards in relation to the several predictor sets. The sample for these analyses consists of full-time workers (i.e., 35 hours/week or greater) with no missing data on any of the measures used (N=354). The "Sinecure" dimension of work rewards is not included in these analyses, since few significant correlates of this dimension were observed and these tended to be uninterpretable.

Table 11.6.1 relates adolescent interests to later work rewards. Only one marginally significant canonical correlation is obtained (.319; the second canonical correlation, at .266, is statistically significant at conventional levels but falls below our .30 criterion of substantive interest. These results are reported, but not discussed. As the interested reader will note, their patterning is quite plausible). These meager results are quite consistent with our earlier conclusion that early interest patterns are not very important determinants of work rewards.

The first canonical variate in the predictor set loads principally on Artistic interests, with the Conventional and Realistic dimensions

Table 11.6.1 Canonical Correlation Analysis of Eleventh Grade Manifest Interest Influences on Work Returns (N = 354)

First Canonical Correlation
(.319; Wilk's Lambda, .803)

Interest	Loading	Return	Loading
REAL11	-.353	EARNS-R	-1.119
INVE11	-.028	SERVE-R	.198
ARTS11	.983	ENGAG-R	.699
SOCL11	.205	ASSOC-R	.323
ENTR11	-.147	POWER-R	-.100
CONV11	-.314		

Second Canonical Correlation
(.266; Wilk's Lambda, .894)

Interest	Loading	Return	Loading
REAL11	-.661	EARNS-R	.268
INVE11	-.233	SERVE-R	.551
ARTS11	-.094	ENGAG-R	-.440
SOCL11	-.313	ASSOC-R	.662
ENTR11	.291	POWER-R	-.856
CONV11	.452		

being of secondary importance and negatively signed. On the reward side, we find three significant loadings -- earnings, engagement and interpersonal associations, in decreasing order of importance. This portrays an interesting interest-reward nexus, although we caution against exaggerating its practical importance. Youth with high Artistic but low Realistic and Conventional scores tend as workers to realize quite low earnings but nevertheless do achieve a reasonable degree of intrinsic gratification in their work (i.e., engagement) and tend also to have satisfying interpersonal relations on the job. Thus we have some evidence of a trade-off of extrinsic for intrinsic rewards among precisely the sorts of workers for whom this might be expected (Artistic and non-Conventional).

Next we consider the relationships between work routines and work rewards, two aspects of occupational structure. The results for this canonical analysis are reported in Table 11.6.2. Once again we find only one substantively interesting canonical correlation, with the second being statistically significant but below the .30 threshold. The canonical variates relating routines to rewards are quite different from those just discussed, even though interests and routines are expressed in the same dimensions.

In this instance, the Social activity domain dominates the activity variate, with substantially lower loadings being obtained for Enterprising, Conventional and Realistic routines. In fact, the last three all are borderline. For the reward set, the social service domain clearly is most important, with power, engagement and earnings aspects of occupational reward filling out the pattern as secondary factors. Thus we find

Table 11.6.2 Canonical Correlation Analysis of Work Routine Influences on Work Returns (N = 354)

First Canonical Correlation
(.418; Wilk's Lambda, .745)

Routine	Loading	Return	Loading
WORK-R	-.290	EARNS-R	-.404
WORK-I	-.047	SERVE-R	1.022
WORK-A	-.115	ENGAG-R	-.414
WORK-S	.906	ASSOC-R	.083
WORK-E	.306	POWER-R	.394
WORK-C	-.289		

Second Canonical Correlation
(.269; Wilk's Lambda, .903)

Routine	Loading	Return	Loading
WORK-R	-.618	EARNS-R	-.216
WORK-I	-.556	SERVE-R	.202
WORK-A	-.058	ENGAG-R	-1.014
WORK-S	-.144	ASSOC-R	.776
WORK-E	.293	POWER-R	-.250
WORK-C	-.239		

that work which is Social mainly and also somewhat Enterprising but which is relatively lacking in Realistic and Conventional components (history teacher, home service representative, community recreation administrator would be examples) tends to confer high social service benefits along with some opportunity to exercise power. These benefits, though, are at the expense of earnings and occupational engagement.

Comparing Tables 11.6.1 and 11.6.2, it is clear that adolescent activities and occupational activities relate to occupational rewards in very different ways. Moreover, it was revealed in Chapter 10 that interests are not very effective in channeling youth into types of work where they can be pursued. Hence, interests do not map especially well onto routines, and neither interests nor routines are especially important determinants of rewards. Moreover, to the extent that they do influence rewards, they do so quite differently. Models of person-environment fit, therefore, as appealing as they are conceptually, are not well approximated in the real world: youth are not noticeably successful in finding employment where their interests can be pursued, and even when they do, they appear to be little better off than they would be otherwise in terms of the gratifications they derive from their work (see also Section 11.5). Also, the kinds of interests that are rewarded are quite different from the kinds of activities that are rewarded, making any simple prescription for effective planning dubious at best. As an end in itself, there might well be reason to advise seeking out employment where you can do the sorts of things that you'd be doing anyway (this is the logic of much interest inventorying), but if the objective is to maximize gratifications (including intrinsic) our results suggest that pursuing manifest interests through work is not a very effective strategy.

Finally, we consider together background characteristics, manifest interests and work routines in relation to work rewards. These results are summarized in Table 11.5.3. Four significant canonical correlations are obtained in this analysis. In view of the above findings it should not be too surprising that these draw heavily, although certainly not exclusively, upon the various background variables. For economy of presentation, predictor variables that did not load significantly on any of the canonical variates are excluded from the table (these are listed in a table note).

The first "returns" variate is distinguished mainly by its negative features: low earnings and little social service value. In minor compensation, however, it does evidence a borderline, positive power loading. What sorts of people are most likely to be found in such relatively ungratifying work? They tend to be high academic achievers, men, workers who are continuing their schooling, and employees whose work is non-Investigative. It is dubious that this allocation of work benefits is either equitable or the most effective use of human resources.

The second pattern of job rewards also is distinguished by relatively low earnings, but in this instance the material sacrifice is more nearly offset by high social service gratification and, secondarily, by minor benefits in terms of occupational power and satisfying interpersonal relations. Workers so situated tend to be women, to have Artistic interests and to be in work characterized by Social and Enterprising routines. In

Table 11.6.3 Canonical Correlation Analysis of Background, Eleventh Grade Manifest Interest and Work Routine Influences on Work Returns (N = 354)[a]

First Canonical Correlation
(.542; Wilk's Lambda, .357)

Background/ Interest/Routine	Loading	Return	Loading
SEX	-.487	EARNS-R	-.783
ACHV63	.563	SERVE-R	-.352
SCHOL NOW	.434	ENGAG-R	-.120
SCHOL3	-.250	ASSOC-R	-.131
SCHOL4	-.255	POWER-R	.293
WORK-R	-.219		
WORK-I	-.397		

Second Canonical Correlation
(.479; Wilk's Lambda, .506)

Background/ Interest/Routine	Loading	Return	Loading
SEX	.454	EARNS-R	-.787
ARTS11	.386	SERVE-R	.773
SCHOL NOW	.210	ENGAG-R	.037
WORK-S	.579	ASSOC-R	.287
WORK-E	.285	POWER-R	.291
WORK-C	-.197		

Third Canonical Correlation
(.429; Wilk's Lambda, .657)

Background/ Interest/Routine	Loading	Returns	Loading
SEX	-.403	EARNS-R	.521
RACE	.344	SERVE-R	.700
ABIL63	.403	ENGAG-R	-1.052
ACHV63	-.315	ASSOC-R	-.504
REAL11	.253	POWER-R	.350
ARTS11	-.312		
CONV11	.221		
SCHOL22	.232		
WORK-R	-.365		
WORK-I	-.211		
WORK-S	.569		

Fourth Canonical Correlation
(.350; Wilk's Lambda, .657)

Background/ Interest/Routine	Loading	Return	Loading
FAED	-.352	EARNS-R	.056
SOCL11	.302	SERVE-R	-.475
ENTR11	-.278	ENGAG-R	.400
CONV11	-.357	ASSOC-R	-.444
HRWORK	.396	POWER-R	.935
SCHOL NOW	.311		
WORK-R	.263		
WORK-A	-.200		
WORK-C	.250		

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[a] Variables from the predictor set with loadings less than .200 are not reported. The following were included in the analysis but do not appear in any of the four sets of loadings: MOED; INVE11; ENTR11; SCHOL2; SCHOL23.

contrast to the first pattern then, this relatively low-earnings work situation is disproportionately female, rather than male. This is a quite interesting reversal of sex-dominance, for the remaining features of these variates are much more "rational" than was true of low-paying "men's work." In this instance, low material rewards are offset by compensating advantages, and advantages which reflect the interests of the workers and the nature of their jobs.

The third canonical variate also involves a complex pattern of offsetting advantages and disadvantages. On the positive side, this work is characterized by high social service benefits, high earnings and moderate opportunity to exercise power. On the other hand, these gains are realized at a severe cost -- extreme lack of engagement with one's work and unsatisfying interpersonal relations. Thus, such work fares rather well in terms of extrinsic rewards, but is lacking in intrinsic benefits. The factors which relate to such reward characteristics also are complex. Men are overrepresented in such situations,as are whites. The effects of aptitude and achievement scores are offsetting, so it is difficult to determine exactly how academic compentency affects such job placement. The findings that Realistic work loads negatively on this factor and Social work positively are plausible in view of the corresponding reward pattern (low engagement and high social service, respectively), although it is unclear why Artistic interests as an adolescent should forecast such work outcomes.

The last significant canonical variate loads primarily on power in the reward cluster. The other loadings all are modest, being positive for engagement and negative for social service benefits and interpersonal associations. Overall, it will be recalled, the jobs available to these youthful workers are relatively lacking in power. It therefore is of interest to note the kinds of workers who realize this scarce commodity. Background characteristics are surprisingly unimportant in this respect, except for the suggestion that high socioeconomic origins may actually have modest disutility. Social interests, in comparison, are marginally valuable, while Conventional ones are somewhat detrimental. The two work commitment measures are in this instance about as important as these other considerations. Youth who work longer work weeks and who are furthering their schooling while working are overrepresented in power-conferring employment. None of these loadings is especially large, however, and none stands out as being singularly important. Although these associations are not large, it appears that ambition (as indexed by longer hours and continuing education) accrues power and also is associated with greater engagement in one's work, although at some cost in terms of service to others and satisfying interpersonal relations.

These analyses afford some sense of the complexity of occupational reward patterns and of the difficult issues that must be confronted in career planning and counseling. It clearly is not sufficient to single out one criterion for success, for jobs confer many gratifications and the secondary gains and losses associated with a particular employment situation may be quite important to a worker's overall well-being. This was illustrated quite forcefully in the distinctions between "men's" and "women's" low paying work. The latter offered substantial compensating advantages in other reward dimensions and evidenced noticeably greater coherence in its reward-interests and reward-routines linkages. The former, on the other hand, was simply low-paying work.

Rewards, it seems, come in packages, and it is important to appreciate the diverse gratifications that a particular job will and will not provide. Moreover, workers' characteristics, competencies and interests also come "packaged," and the matching of workers to work along the several dimensions that seem to hang together may be no simple task. Different sorts of workers and different sorts of work activities tended to realize different reward patterns. Overall, interests and routines were not very influential, but in particular situations they sometimes were. However, the specific interests and work routines that were important varied from reward pattern to reward pattern. It may well be then that there are few if any generalized work resources and that what is needed for effective career-planning and job search are very fine-grained descriptions of the kinds of worker qualities that are valued for a broad range of employment settings.

At the very least, these analyses illustrate the danger in stripping work of its coherence and focusing exclusively on only one of its dimensions or attributes. No single reward dimension characterizes the complex benefits that an occupation can confer and no single routine dimension reflects its activity pattern. While for certain problems and issues particular work rewards and routines may be especially salient, it should not be forgotten that these are embedded in broader reward and routine structures. Considered in the context of these structures their significance may be very different than when considered in isolation.

FOOTNOTES

[1] This criterion is met because our listwise sample was selected to have activities present also (see Chapter 10.1) in order to facilitate comparison of the roles of interests across these two work outcome sets.

[2] These advantages were not expected, although the others are predictable from theory.

[3] The average intercorrelations among scales, excluding the sinecure dimension, were, for males, .568 and, for females, .432.

[4] We will include data for job sinecure without comment, discussing only the remaining five outcomes.

[5] The literature on educational differences in job satisfaction is quite consistent on this point. Generally the higher the educational attainment, the lower the job satisfaction.

[6] The small impact of race in the total sample is not replicated in any of the other subgroups.

[7] The small direct effect of race on associations in the total sample is not replicated in any other subgroup.

[8] High school achievement is important for educational attainment beyond high school; furthermore, achievement is a much more consistent determinant of returns among college than among non-college youth in our sample (compare blocks C and D in Table 11.4.1).

[9] Not values, but what realistically could be expected from an entry position.

[10] Items such as the following indexed power returns: a chance to make my own decisions; a chance to be in charge of things; a chance to direct others; a job that means I'm looked up to by other people; a chance to work by myself.

[11] Blacks are not noticeably less likely than whites to be engaged in the more advantageous occupational activities.

Chapter 12 -- Discussion

In the preceding chapters we have sought to unravel some of the complexities of in-school career development and to assess their consequences for youths' work experiences in the first few years beyond high school graduation. Stepping back a bit now from these very detailed, technically dense analyses, we believe that, by and large, we have achieved our aims. There are, of course,the inevitable frustrations that follow from data limitations. These restrictions required that some issues of interest be set aside entirely and that others not be addressed as thoroughly as we would want. As troublesome as these concerns are, however, we don't think they are exceptionally severe in the present instance relative to other studies of this genre. Thus, although too literal reliance upon the fine details of our analyses clearly would not be wise, the general patterning of the relationships we observed and their general implications probably are quite sound, and it is to these broad strokes that we now direct our attention.

In a very real sense, our results are of interest as much for what they do not show as for what they do. We consider the latter first.

The life-course framework, which we have borrowed from the status attainment research tradition in sociology, appears to be a useful conceptual apparatus for organizing career development issues, at least of the sort presently considered. Youths' progression through the grades and levels of schooling maps reasonably well onto the various career development stages advanced in the vocational psychology literature.

The sequential and cumulative nature of these developmental processes, the locus of influences in various institutional settings, youths' standing on diverse benchmark criteria, the interrelationships among these criteria at any particular phase, and their patterns of stability and change over time all can be accommodated conveniently in this framework. Additionally, differences in the particulars of career development processes and outcomes between population subgroups, such as men and women and blacks and whites, are readily considered and a truly impressive variety of sources of influence can be made manageable. On all these counts, then, the orienting imagery of the life-course perspective is demonstrated to have considerable heuristic value.

On the more substantive side, we think our analyses also demonstrate that joining the traditional concerns of sociologists and psychologists affords a more comprehensive and sensitive characterization of school-based career development processes. This is the case despite our having found many of the relationships we entertained to be of little or no consequence.

Sociologists, of course, are especially attentive to the differentiation of socialization experiences, school attainments and career outcomes according to ascribed criteria, such as race and gender, and to situational constraints originating in institutional arrangements and functioning. Clearly these are powerful forces.

Sex differences in interest patterns and occupational placement are especially pronounced, and most notably so with regard to realistic pursuits. Women are much less likely than men to engage in realistic activities during adolescence and this difference persists through the early years of postsecondary employment, with women, as a result, being much less frequently found in jobs entailing realistic routines. While this is the most extreme difference, the entire constellation of sex-stereotypic interest patterns, as indexed by our data on discretionary time utilization, is apparent as early as the seventh grade (our earliest observations). Additionally, boys and girls grow further apart along these dimensions as they mature through adolescence, suggesting that neither adolescent sex-role socialization nor experiences in school do anything to counteract either the sex-typing of interests or the sex differentiation of work experiences it anticipates.

Although sex differences along these lines are much more substantial and pervasive than are those associated with ei[illegible] race or socioeconomic origins, the latter are hardly inconsequential. Small, but nonetheless important, differences involving these aspects of social background were observed for job search strategies, levels and sources of occupational knowledge, curriculum placement and interest patterns. In general, it was found that those least advantageously situated in the stratification hierarchy were the least informed about the particulars of their work before beginning it and were most dependent upon personal, and therefore presumably unreliable and ill-informed, sources in seeking employment. The same is true, incidentally, for youth enrolled in vocational programs in high school. For them, job search is an immediate and pressing concern, but it appears that schools do little to enhance their prospects for finding employment suited to their training.

Our results regarding the strong association between SES origins and plans to enroll in a college preparatory curriculum are particularly noteworthy, along with the further findings that family status characteristics do in fact predict actual enrollments rather well and that being so enrolled is itself a valuable educational resource. Plans for college also are very much responsive to family influences. High status youth are much more likely than are their lower status counterparts to intend to go to college and they come upon these intentions much earlier. In fact, the college plans of at least a substantial portion of these youth emerge so early (and persist thereafter) that they would have to be considered socioeconomically linked normative expectations rather than self-reflective responses to the particulars of one's interests, competencies and long-term vocational objectives. For many youth, then, family circumstances essentially dictate one's eventual educational fate, making higher educational attainment in these instances very much akin to an ascribed status.

We find, then, that sex, race and socioeconomic status continue to intrude in the career development and educational attainment processes. Their importance in all likelihood follows from differences in family socialization practices, family resources, and social expectations of a more general nature, and the consequences of these already are apparent early in youths' academic careers. This is reflected in sex-typed interest patterns and differences in youths' orientation to college and in their high school curriculum plans. Their continuing influence is later felt in youths' actual track placements, in the sources they draw upon in informing occupational preferences and occupational search, and in the levels of occupational information they eventually acquire (or, more often, fail to acquire).

The portrait of "in-school" career development suggested by our various analyses might, with but few exceptions, be characterized more properly as non-development, for most of the linkages and patterns anticipated from perspectives in vocational psychology either fail to emerge or, when they do, are so frail as to offer little consolation. We, of course, are not the first to present such sobering conclusions regarding levels of vocational maturity and the orderliness of career development progressions (see, for example, DeFleur and Menke, 1975; Jordaan and Heyde, 1979; Gribbons and Lohnes, 1968; Prediger, Roth and Noeth, 1974), but this makes the message no less disquieting, and our analyses do touch upon more such concerns than is typical. Hence, although the implications of our conclusions are not novel, our study does broaden their applicability considerably.

Consider, for example, what we have learned regarding pre-occupational manifest interests and their relevance for later job placement. Making use of Holland's classification of personality and occupation types, we scaled leisure activities into domains that parallel important distinctions in job routines. These sorts of activities, then, should be relevant to career development because of their immediate transfer to the world of work. Leisure pursuits allow one to determine what sorts of activities one finds personally rewarding and to test out one's talents. The self-insight deriving from these experiences should, in turn, carry over into the occupational realm, contributing to a more satisfactory match between personality and position by allowing prospective workers to seek out employment compatible with their temperament, disposition, talents, interests and so forth.

As a model of how career development should work, few probably would take exception to this scenario; unfortunately, it doesn't characterize especially well at all how career development actually does work. Beginning on a positive note, activity patterns did fall into clusters very much as anticipated by Holland, and individual's activity patterns were themselves reasonably stable over the school years. Theory suggests that these, in turn, should contribute to a satisfying work situation and help to clarify occupational preferences. They fail, however, on several empirical counts.

First, RIASEC-relevant activities turn out not to be very popular pastimes among adolescents. In fact, they consistently are among the least popular of the leisure pursuits covered in our inventory, and, if anything, they become even less so as we progress up grade levels. Hence, it appears that youth have little interest in the sorts of interests that might contribute to effective career-decision making.

Perhaps because of this, we find, second, that the variation in manifest interest patterns that is observed does not contribute appreciably to any of the other "in-school" or labor market career development outcomes we studied. To be sure, we did observe scattered relationships of moderate magnitude that were consistent with this model, and we shall return to these shortly, but the overall import of our inquiry is that adolescent leisure time interests are not very important considerations in career development, at least not through the first few years beyond high school. Thus, although leisure pursuits may well be potential resources in the career-decision making process, it appears that their usefulness in this regard presently is by-and-large untapped. It is possible, of course, that the non-theoretically relevant, though generally more popular, interest domains might actually evidence stronger ties to such career development outcomes, but testing this out will have to await further study, since these were set aside in the present analyses.

This, then, is one respect in which the experiences of the Growth Study youth fall short of what would be expected, or, perhaps more accurately, hoped for, under prevailing models of effective career-decision making and development. There are many others. We find, for example, that these adolescents have given pitifully little thought to their vocational futures (educational planning appears to be somewhat more commonplace) and that the occupational aspirations they do express typically are quite unrealistic, constricted and sex-typed. We find too that many youth, even as late as the junior year of high school, are still shifting about in terms of their curriculum enrollments and are uncertain whether or not to attend college.

Thus, the career planning and "in-school" career development of many, if not most, youth is characterized by uncertainty, indecision, floundering and flights of fancy. Even the one instance in which determination is reasonably clear and secure affords little comfort, at least not for those committed to the vision of a rational, reflective model of decision-making. A substantial majority of these youth have held firm in their plans either to attend or not to attend college from at least the seventh grade, and for many this decision in all likelihood was made much earlier. While these expectations probably will be realized in many instances, neither their longevity nor their accuracy implies that they have been come upon "properly." In fact, to the contrary, their being so longstanding suggests that in many cases they probably do not follow from interests or experiences that make them sensible, either academically or vocationally. This is not to say that such decisions are necessarily bad or that they are not in the best interests of the particular youth, but simply that they have their origins in formally (vis-a-vis models of career decision making) irrelevant considerations.

After completing high school and entering the work force, youths' actual job experiences appear to be little more "orderly." Most young workers knew either very little or nothing about their present jobs before assuming them. This itself is perhaps one of the most telling conclusions of our entire analysis, for it is difficult to fathom how any planning process could be considered successful if its result is a job placement about whose particulars the worker is completely ignorant! These jobs, of course, are disproportionately entry-level positions and few, if any, of our sample either are in or are preparing for professional careers or other employment requiring appreciable advanced formal training. We must, therefore, keep in mind that the same results might not hold for higher status jobs or among college-graduate job seekers. Even granting this, however, low level jobs and non-college prepared workers are, and will remain, a very significant part of the occupational structure and of the labor force, respectively, and it appears that for these sorts of workers in these sorts of work situations, something is seriously amiss.

Even if we conclude that, intentions aside, workers are not very effective in finding the kind of employment they might reasonably be expected to be looking for (i.e., work they know something about), it still is at least conceivable that the invisible hand of market forces somehow achieves a reasonable fit between worker and work. Although this certainly is worth entertaining, we find little evidence to sustain it in these data.

Our primary criterion of the suitability of a particular worker for a particular job is the compatibility of the interests he or she pursued as an adolescent and the activities the job entails. It will be recalled that both interests and job routines were scaled into conceptually parallel dimensions, the RIASEC classification advanced in Holland's theory of personality and work organization. The simplest expectation of person-environment "fit" is that workers would find themselves in work situations where they could pursue their previously formulated interests. More refined predictions also could be derived from Holland's arguments and evidence regarding the constellations of both interests and work routines that should be most commonplace, but it seemed sensible to concentrate first on the one-on-one mapping before searching out more complicated patterns of correspondance.

The best that can be said for how this perspective fared is that some evidence of some fit was found for some dimensions. This is about as qualified as positive conclusions can be, but we think it accurately characterizes the implications of our several assaults on this issue.

Youth with realistic interests apparently are most successful in finding, or, more precisely, most often find themselves in, work situations in which those sorts of activities are prevalent. Artistic and social interests, too, tend to find outlets in the jobs of people who hold them. None of these relationships is especially large however; and they did not always appear in all of the several subgroups of workers considered (e.g., full-time; part-time; college-attenders; non-students). Other relations between interests and routines were infrequent and uniformly small.

We also observed some sensible, if modest, linkages between adolescent interests and later job rewards. For example, artistically oriented youth tended to be disproportionately in jobs ranking low on material benefits but relatively high on psychic and interpersonal gratifications. Socially oriented youth too were likely to realize rewards along the dimensions especially important to them. Thus, in terms of individual relationships and even to some extent the patterning of interest and reward clusters, we found that youth sometimes are successful in locating work that confers the kinds of rewards their interests suggest they would value.

Here, though, we encounter a troublesome uncertainty, for it is unclear whether these differences in expressed satisfaction with the various domains of reward available through work follow from differences in actual job conditions, from the worker's manipulation of the job situation or from the relativism of expressed satisfaction.

The items eliciting the reward data unfortunately were sufficiently ambiguous as to not preclude any of these possibilities, and other results suggest that the reports themselves are not entirely objective. For example, educational level was negatively associated with outcomes for practically all rewards. Although it is possible that more highly educated workers actually do receive absolutely less benefit across a broad range of criteria in entry level jobs (human capital theorists, for example,probably would see this as reflecting the trade-off of short-term gain for investments in skill enhancing on-the-job training, the returns on which will be realized later in workers' careers), it is more plausible that their lower levels of satisfaction follow from higher initial expectations rather than absolute deprivation. Also, although interests and routines did occasionally relate to rewards as expected, this was not due to what would be the sensible sequence of steps, i.e., workers being located in jobs where their interests could be pursued, resulting in better job performance, resulting in higher levels of job reward, both absolute and relative, objective and subjective.

Apart from this general line of reasoning, it is not obvious why, in terms of person-environment fit models, workers' interests should be rewarded. On the other hand, the subjectivity of our data leaves open several other explanations. These, in contrast, do not credit the various benefits that workers seemingly realize to conditions or activities inherent in the work itself.

We know, for example, through numerous other surveys, that workers overall tend to be remarkably satisfied with their employment, at least in general terms. Theories of alienation and objective assessments of work conditions in many occupations and settings would, however, lead us to expect otherwise. Thus, it appears that many workers are quite adept at maintaining, at least on the verbal level, a reasonably comfortable view of the world of work and of their position in it, despite the objective realities that impinge on them daily (of course it is possible that the theories are wrong and the workers are right, but we withhold judgement on this for now). Our results here, then, simply could be another manifestation of this phenomenon, with workers selectively perceiving, or unknowingly distorting, the less tangible aspects of their job so as to maintain a reasonable sense of psychological well-being. The objective work situation itself, then, becomes, if only to a limited degree, something of a projective test, with participants imparting self-serving definition to its fuzzy boundaries.

Another possibility does not deny the reality of these rewards, but only that they are forthcoming immediately from fixed aspects of the job itself. Workers are not passive recipients of the beneficience of work organization. Rather, they are active agents in the work process, and as such their personalities, expectations and talents breathe life into the job description. We are not arguing, of course, that the reinforcement potential of work situations is infinitely elastic, for the objective characteristics of jobs probably do set limits on what could be expected of them. Nevertheless, the limits themselves more likely involve a range of possibilities rather than a fixed point, and how a particular worker fares along that range may well follow as much from what she brings to the job as from anything intrinsic to the work. To some degree, then, work is what one makes of it, and it should not be too surprising that workers are somewhat successful (although not too much so, it seems) in manipulating the work situation so as to realize non-material benefits of the sort that are important to them personally.

This line of reasoning is not so much at odds with current thinking about person-environment fit as it is an elaboration of that perspective. There now is some evidence that the characteristics of work organization influence workers' personality (Kornhauser, 1975; Brousseau, 1976; Kohn, 1969; Kohn and Schooler, 1973; Torbert, 1973) and it is equally plausible that workers' personality should lend substance to the skeleton of a particular job description. Hence, the reinforcement potential of an actual work situation is variable, and therefore the benefit derived from formally identical jobs should be expected to differ somewhat from worker to worker. Person-environment fit, then, does not follow simply from the happenstance of whether workers with fixed needs fall into jobs with suitable, fixed reward patterns, which is what much of this literature seems to suggest. There is, rather, a more dynamic aspect to this process, in which workers, as agents of their own interests, attempt to maximize their gratifications within the limits permitted by the labor process and work organization.

This, of course, is entirely speculative, but it strikes us plausible and it is consistent with the patterning of our results. In fact, the spate of recent interest in job enrichment programs seems to follow from similar assumptions about the nature of work, that is, that nominally equivalent jobs can vary widely in the reinforcement they provide as a function of the fine details of the organization of that labor. It may well be, on a less formal level, that some workers are more adept job enrichers than others and that person-environment fit can be, to some extent, created on the job, rather than having to be achieved only through selective recruitment. If this is the case, then it is important to learn more about what distinguishes those more skillful in tailoring their work to their own needs from those less so, what distinguishes jobs with a broad range of reinforcement potential from those much narrower in the gratifications they might confer, and how workers and jobs differing in these respects do, or might, come together.

In one sense, this study is replete with null results. Clearly much of what we had expected, or hoped, to find did not materialize: youth, while in school, are not very much engaged in vocational planning; they are not involved in occupationally-relevant leisure pursuits; they are not very successful in locating employment suited to their interests, talents and preparation. Despite this, though, we still believe that our interest in these issues is not misplaced. Although our conclusions by-and-large have been negative, that hardly implies they are uninformative. Quite to the contrary, in fact, it is very important to recognize that linkages which "should" exist don't and that experiences which might constitute valuable resources in informing career planning and in promoting suitable job placements aren't. Proceeding from such a knowledge base, corrective programs can be targeted better to where the need and the expected benefits are greatest.

Compare this with the counseling insight forthcoming from the very potent relationships that practically exhaust the sociologists' traditional bailiwick: SES and cognitive ability relate to practically everything;

intending to go to college enhances considerably one's prospects for actually doing so; and, academic credentials are valuable resources in the quest for high status work and high earnings. These linkages are quite real and quite important, and in combination they characterize well, if only in general terms, the broad outlines of the stratification process. We thus do not mean to gainsay their informative value, for undisputably it is considerable; still, however, they offer very little practical guidance as to how one might go about getting from here to there.

To the extent that eventual labor market fortunes are influenced at all by what transpires during adolescence, the most important manipulable considerations likely will involve various aspects of what one thinks, does and knows. If this is so, then strengthening the weak linkages documented in our analyses probably should be a high priority in programmatic efforts to better rationalize career planning, the matching of workers to work, and career development processes generally. Youth need to invest more of their energies in activities likely to provide vocationally-relevant self-insight, to understand more fully how decisions made and actions taken while in school might limit or expand options later, to be better informed about the nature of work, the ways labor markets operate, and what specific jobs entail, to be more aware of their own strengths and weaknesses and more knowledgeable about the sorts of work in which these are and are not important, and they need to adopt a longer time frame than appears to be typical in thinking about the future, especially, but by no means exclusively, about their occupational futures.

We make no particular claims of originality for this litany, for these are precisely the sorts of objectives that most career counseling programs directed at adolescents are intended to achieve. In this respect, then, our analyses simply underscore the magnitude of these problems. Increasing youths' self-awareness, equipping them with more and better information about work,and encouraging more of a future orientation on their part no doubt would be useful and we certainly encourage continued, and even greater, investment in such policies. At the same time, however, we think it important that expectations for what they are likely to accomplish be realistic.

The fact of the matter is that youth presently are not very successful in locating work in which their interests can be pursued. It is unlikely, we think, that such programs will change this dramatically, at least not for those young workers who are destined for relatively low-level employment. Given the occupational composition of the work force, many, of necessity, will find themselves in such situations. Regardless of what these youth know about themselves and about the world of work, they will have little control over the demand conditions that will very much influence, if not dictate, their fate: youthful labor markets are, and in all likelihood will remain, tight; low level jobs tend to be quite homogeneous over many of the dimensions that youth, and workers generally, value most; and career trajectories and opportunities for advancement in many instances are built into the organization of work itself. The latter, then, are not responsive to invididual initiative or much influenced by the personal resources that employees bring into the work situation.

The notion of "opportunity structures" seems to have fallen from favor in recent years, in part for quite good reason. As an explanatory construct, it has proven quite difficult to pin down empirically and all too often it is invoked with little regard for the canons of proof, constituting little more than self-serving rhetoric. Nevertheless, a growing body of theory and research regarding labor market cleavages and structural constraints following from the organization of work seems to have clear implications for the career opportunities confronting youth. They suggest that many youthful workers in low level jobs will encounter structural barriers that limit their ability to realize their vocational ends, in either their initial job placements or through later career progression.

The perspectives that suggest the existence of such structural barriers are themselves wide-ranging in the specific aspects of labor market functioning and work organization they emphasize -- including occupational differentiation, industrial sectors, intra-firm hierarchies, and class organization (Averitt, 1968; Bluestone, 1970; Braverman, 1974; Carchedi, 1975; Carter and Carnoy, 1974; Doeringer and Piore, 1971; Edwards, Reich and Gordon, 1975; Gordon, 1972; Kalleberg and Sorenson, 1979; Spilerman, 1977; Thurow, 1975; Wright, 1976). Admittedly, too, the evidence in support of these notions is both sparse and of uneven quality (Andrisani, 1973; Beck, Patrick and Tolbert, 1978; Bibb and Form, 1977; Osterman, 1975; Robinson and Kelley, 1979; Rosenberg, 1975; Wright and Perrone, 1977). Still, this literature certainly is at least suggestive and more conclusive research probably will be quick in coming in view of the interest it has attracted recently.

Despite the substantial differences that otherwise characterize these writings, they do contain several themes on which there is rather general agreement, and these are of most immediate interest. All propose the existence of multiple labor markets and of institutional barriers to the free flow of labor between them. These, in turn, are composed of very different kinds of work with very different potential for career advancement. Typically at least one, and sometimes several, of these labor market sectors is assumed to consist disproportionately of what could only be considered "dead end" jobs -- they offer little prospect for upward mobility, are not skill-enhancing, and employment in them usually is intermittent and relatively unrewarding. All-in-all, opportunities are very limited and once in, it is difficult to get out, except perhaps by dropping out. These jobs tend to by entry-level positions and do not require much, if any, advanced academic preparation, among other distinguishing characteristics.

If this literature is at all correct, it is likely that the youth whose work experiences and preparation we studied are disproportionately in work of this general sort. If work and access to it is only "sort of" this way, this probably would be sufficient to provide a reasonable accounting of the failure of models of person-environment fit in our analyses. Youthful workers may simply have little latitude in seeking out personally fulfilling employment. It's difficult enough for them to find any job, let alone the "right" one. Moreover, the few employment opportunities that might be available to them really aren't all that different from one another in the things that matter most. If this is the problem and if it does originate in macro-economic/institutional relations as theory seems to suggest, then teaching youth more about themselves and about the particulars of various jobs really shouldn't be expected to accomplish a great deal.

Table A.1 Total GROUP4 Sample Statistics and Comparable Statistics for Subgroups Used in Analysis Chapters[a]

COMPARISON VARIABLES	GROUP4 PAIRWISE			GROUP4 LIST N = 1643	
	$\bar{X}$	S	N	$\bar{X}$	S
SEX	.509	.500	6119	.522	.500
RACE	.185	.388	6095	.104	.306
FAED67	12.70	2.97	5208	12.89	2.92
MOED67	12.49	2.47	5335	12.65	2.41
FAOC67	43.27	19.82	5341	44.01	19.68
ABIL63	288	14.2	5850	291	13.2
ACHV63	1704	82.0	5640	1729	77.1
SAT-V	386	118.6	5323	416	118.8
SAT-M	405	128.7	5305	438	130.2
APPLID	.364	.481	6119	.530	.499
ADMITD	.135	.342	6119	.216	.412
EDEXJR	.714	.452	4657	.777	.417
EDEXSR	.641	.480	5137	.713	.453
REAL11	1.70	.55	5677	1.69	.52
INVE11	1.42	.59	5678	1.44	.59
ARTS11	1.54	.45	5682	1.58	.43
SOCL11	2.13	.55	5688	2.11	.53
ENTR11	2.02	.79	5661	2.02	.77
CONV11	2.25	.94	5663	2.22	.94
CURR67	.530	.499	5561	.659	.474

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[a] See text for variable abbreviations.

Table A.2 Total AEQSP2 Sample Statistics and Comparable Statistics for Subgroups Used in Various Analyses[a]

												All Employed		Not College		College		Workers	
COMPARISON	AEQSP2		PAIRWISE	AEQSP2 LIST		AEQSP2 LIST		AEQSP2 LIST		AEQSP2 LIST		AEQSP2 LIST		AEQSP2 LIST		AEQSP2 LIST		AEQSP2 LIST	
VARIABLES	N	X̄	SD	N = 354		N = 947		N = 1167		N = 417		N = 504		N = 357		N = 147		N = 426	
				X̄	SD	X̄	SD	X̄	SD	X̄	SD	X̄	SD	X̄	SD	X̄	SD	X̄	SD
SEX	2236	.550	.498	.689	.463	.605	.489	.590	.492	.674	.469	.677	.468	.762	.426	.469	.501	.700	.459
RACE	2060	.108	.310	.079	.270	.059	.236	.068	.251	.077	.266	.095	.294	.092	.290	.102	.304	.094	.292
FAED63	1517	13.39	2.62	12.76	2.58	13.49	2.55	13.43	2.57	12.97	2.62								
MOED63	1562	13.08	2.40	12.61	2.17	13.25	2.36	13.14	2.37	12.72	2.27								
ABIL63	1707	288	36.3	288	29.3	293	[illegible]	293	23.3	289	27.7	290	20.7	285	28.8	295	27.3	287	30.6
ACHV63	1745	1723	79.7	1713	71.2	1740	74.3	[illegible]	77.0	1719	73.7	1716	72.7	1700	66.0	1755	73.4	1709	71.6
SAT-V	1756	405	113.6			432	115.8												
SAT-M	1756	430	119.3			483	119.5												
APPLID	2236	.325	.464			.522	.500												
ADMITD	2236	.082	.274			.139	.346												
EDEXJR	1471	.748	.434			.776	.417												
EDEXSR	1650	.686	.464			.742	.438												
REAL11	1716	1.62	.81			1.62	.80	1.63	.81	1.60	.82								
INVE11	1716	1.43	.93			1.46	.84	1.44	.84	1.38	.81								
ARTS11	1716	1.54	.41			1.60	.42	1.56	.42	1.51	.41								
SOCL11	1716	2.06	.53			2.11	.53	2.08	.53	2.15	.51								
ENTR11	1716	2.02	.81			2.07	.79	2.05	.81	2.02	.84								
CONV11	1716	2.33	.90			2.38	.90	2.31	.90	2.44	.87								
CURR63	1716	.627	.484			.723	.448	.690	.463	.547	.498								
EARNS-V																			
EARNS-V	1923	3.97	.70					3.89	.71										
SERVE-V	1904	3.97	.90					4.01	.88										
ENGAG-V	1921	4.08	.59					4.09	.57										
ASSOC-V	1922	4.25	.64					4.25	.63										
POWER-V	1923	3.22	.73					3.21	.70										
SINEC-V	1896	2.29	.83					2.26	.81										
EARNS-R	1163	3.47	1.04	3.61	.90					3.40	.96	3.47	.98	3.73	.88	2.85	.99	3.62	.92
SERVE-R	1151	3.31	1.25	3.28	1.23					3.25	1.24	3.29	1.24	3.41	1.17	3.01	1.38	3.33	1.22
ENGAG-R	1170	3.56	1.01	3.67	.92					3.59	.96	3.59	.99	3.76	.91	3.20	1.07	3.70	.92
ASSOC-R	1173	3.96	.92	4.10	.87					4.04	.88	4.06	.88	4.17	.85	3.78	.90	4.11	.87
POWER-R	1171	2.87	.95	2.85	.91					2.81	.90	2.81	.92	2.85	.92	2.72	.93	2.86	.92
SINEC-R	1155	2.40	.99							2.38	1.00	2.35	1.00	2.28	.98	2.50	1.01	2.28	.98
WORK-R	1185	7.73	3.99	7.06	3.51					6.95	3.43	6.94	3.38	6.82	3.21	7.24	3.74	7.05	3.45
WORK-I	1178	10.73	4.66	10.19	4.43					10.00	4.37	9.98	4.36	9.88	4.31	10.21	4.43	10.20	4.43
WORK-A	1183	6.67	2.49	6.36	1.58					6.40	1.80	6.36	1.74	6.40	1.84	6.29	1.13	6.34	1.65
WORK-S	1179	9.28	3.68	9.13	3.65					9.01	3.57	9.05	3.67	9.05	3.73	9.06	3.82	9.19	3.72
WORK-E	1179	9.23	5.01	9.69	5.26					9.89	5.42	9.99	5.44	9.44	5.02	11.32	6.17	6.70	5.30
WORK-C	1184	12.49	4.87	13.42	4.94					13.29	4.91	13.24	4.93	13.25	5.01	13.21	4.74	13.32	4.97
R	1174	.113	.317									.093	.291	.101	.302	.075	.264	.099	.298
I	1174	.213	.410									.143	.350	.143	.350	.143	.351	.155	.362
A	1174	.030	.170									.018	.133	.020	.139	.014	.118	.016	.127
S	1174	.096	.295									.099	.299	.098	.298	.102	.304	.099	.298
E	1174	.157	.364									.198	.399	.146	.353	.327	.471	.171	.377
C	1174	.391	.488									.448	.498	.493	.501	.340	.475	.450	.499
HRWORK	1809	23.22	18.30	40.31	4.73					36.58	9.82	36.81	9.14	39.67	6.09	29.86	11.35	40.25	4.69
SCLNOW	1938	.457	.498	.190	.400					.297	.456	.292	.455	0	0	1	0	.188	.391
OCASPR	232	.065	.246																
OCASPI	232	.129	.336																
OCASPA	232	.030	.171																
OCASPS	232	.461	.500																
OCASPE	232	.069	.254																
OCASPC	232	.248	.431																

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[a] See text for variable abbreviations.

Table B-1 Description of Holland's Personality Types and Work Environments

Personality	Work Environment	Sample Occupations	Related Categories
Realistic			
Has mechanical ability and lacks social ability; values concrete things, power, money, status. Is asocial, conforming, frank, materialistic, practical, stable, and uninsightful.	Fosters technical competencies and achievements, and manipulation of objects, machines, or animals; rewards the display of such values as money, power, and possessions. Encourages people to see the world in simple, tangible and traditional terms.	Mechanical engineer Plumber Auto mechanic Fork lift operator	Manual Skilled trades Mechanical
Investigative			
Has mathematical and scientific ability and lacks leadership ability; values science. Is analytical, cautious, critical, independent, methodical, rational, reserved, and unpopular.	Fosters scientific competencies and achievements, and observation and systematic investigation of phenomena; rewards the display of scientific values. Encourages people to see the world in complex, abstract, independent, and original ways.	Physicist Weather observer Laboratory assistant TV repairperson	Scientific Intellectual
Artistic			
Has artistic and musical ability; values aesthetic qualities. Is complicated, disorderly, emotional, impulsive intuitive, non-conforming, and original.	Fosters artistic competencies and achievements, and ambiguous, free or unsystematized work; rewards display of artistic values. Encourages people to see the world in complex, independent, unconventional, and flexible ways.	Editor Decorator Garment designer Fashion model	Aesthetic Cultural Intellectual

Table B-1 continued

Social			
Understands others and has teaching ability; values social and ethical activities and problems. Is cooperative, friendly, helpful, insightful, responsible, tactful, and understanding.	Fosters interpersonal competencies, and informing, training, curing, or enlightening others; rewards the display of social or humanitarian values. Encourages people to see the world in flexible ways.	Minister Elementary teacher Physical therapist Ward attendant	Education Social Service
Enterprising			
Has leadership and persuasive abilities and lacks scientific ability; values political and economic achievement. Is acquisitive, ambitious, domineering, energetic, optimistic, self-confident, and talkative.	Fosters persuasive and leadership competencies or achievements, and the manipulation of others for personal or organizational goals; rewards the display of enterprising values and goals such as money, power, and status. Encourages people to see the world in terms of power, status, responsibility, and in stereotyped and simple terms.	Lawyer Contractor Automobile dealer Salesperson	Entrepreneurial Business contact Management Sales Political
Conventional			
Has clerical and numerical ability; values business and economic achievement. Is conforming, conscientious, inflexible, inhibited, orderly, practical, self-controlled, and unimaginative.	Fosters conformity and clerical competencies, and explicit manipulation of data, records, or written material; rewards the display of such values as money, dependability, conformity. Encourages people to see the world in conventional, stereotyped, constricted, simple, and dependent ways.	Certified public accountant Secretary Timekeeper Clerk	Clerical Business detail Bureaucratic

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[a] Adapted from Gottfredson (1978b), Table 1.

Table C-1 Factor Structure for Active Interests of White Males, 7th Grade[a,b]

FACTOR I (9.8) General Sports

SVHB19	.578	practice sports on own
SVHB21	.534	play outdoor group sports
SVHB25	.501	attend athletic events
SVHB18	.396	play individual sports

FACTOR II (5.0) Musical Interests

SVHB10	.888	practice music
SVHB43	.587	play in band
SVHB41	.439	make solo performances

FACTOR III (4.8) Specific Sports

SVHB45	.682	play on football team
SVHB46	.603	play on basketball team
SVHB48	.551	play on track team
SVHB47	.445	play on baseball team
SVHB49	.314	play on miscellaneous teams

FACTOR IV (3.6) Social Life--Opposite Sex

SVHB29	.655	go on dates
SVHB28	.623	go to dances

FACTOR V (3.2) Family/Home Orientation

SVHB15	.671	cook for family
SVHB14	.399	clean house
SVHB03	.390	practice recipes

FACTOR VI (3.0) Mechanical Orientation

SVHB01	.698	repair things
SVHB05	.537	electronic equipment
SVHB07	.478	build things

FACTOR VII (2.7) Wander Around

SVHB17	.409	ride on motorcycle
SVHB16	.360	ride on bicycle
SVHB33	.307	look in stores

FACTOR VIII (2.6) School Activities

SVHB53	.837	work on yearbook
SVHB54	.400	miscellaneous publications
SVHB50	.389	member of pep squad

FACTOR IX (2.5) Social Life--Same Sex

SVHB31	.618	loaf with friends
SVHB30	.366	ride around in cars

---

[a] Sample size is 1030. Seventeen factors had eigenvalues greater than or equal to 1.00, and accounted for 53.6% of the total variance. The nine factors selected accounted for 37.2% of the total variance. The oblique solution resulted in inter-factor correlations of less than .36 in absolute magnitude among the nine factors selected.

[b] All 54 "SVHB" variables were included in this factor analysis; these represented "active" hobbies or activities. All "reading" and "listening" items ("SVRD," "SVRR") were excluded. Numbers in parentheses are the percents of total variance accounted for by each factor.

Table C-2 Factor Structure for Active Interests of White Males, 9th Grade[a,b]

FACTOR I (9.0) Wander Around

NIHB33	.550	look in stores
NIHB32	.513	do personal shopping

FACTOR II (5.2) Musical Interests

NIHB10	.780	practice music
NIHB43	.731	play in band
NIHB41	.432	make solo performances

FACTOR III (4.5) Specific Sports

NIHB45	.725	play on football team
NIHB46	.569	play on basketball team
NIHB47	.565	play on baseball team
NIHB48	.349	play on track team

FACTOR IV (3.7) Social Life--Opposite Sex

NIHB28	.617	go to dances
NIHB29	.564	go on dates
NIHB38	.419	talk on telephone

FACTOR V (3.6) Mechanical Orientation

NIHB01	.730	repair things
NIHB05	.530	electronic equipment
NIHB07	.409	build things

FACTOR VI (3.0) Social Life--Same Sex

NIHB31	.561	loaf with friends
NIHB30	.409	ride around in cars

FACTOR VII (2.7) Community Orientation

NIHB23	.390	attend club meetings
NIHB24	.340	attend church socials
NIHB44	.332	member of vocal group

FACTOR VIII (2.6) School Activities

NIHB50	.513	member of pep squad
NIHB54	.462	miscellaneous publications

FACTOR IX (2.4) Family/Home Orientation

NIHB42	.763	babysit
NIHB13	.640	take care of siblings

---

[a] The sample size (pairwise-present) is 1285-1297. Seventeed factors had eigenvalues greater than or equal to 1.00, and accounted for 53.0% of the total variance. The nine factors selected accounted for 36.6% of the total variance. The oblique solution resulted in inter-factor correlations of less than .31 in absolute magnitude among the nine factors selected.

[b] All 54 "NIHB" variables were included in this factor analysis; these represented "active" hobbies or activities. All "reading" and "listening" items ("NIRD," "NIRR") were excluded. Numbers in parentheses are the percents of total variance accounted for by each factor.

Table C-3 Factor Structure for Active Interests of White Males, 11th Grade[a,b]

FACTOR I (9.5) Social Life--Opposite Sex

ELHB29	.490	go on dates
ELHB28	.468	go to dances
ELHB38	.403	talk on telephone
ELHB27	.374	roller/ice skate

FACTOR II (6.2) Community Orientation

ELHB40	.426	act in plays
ELHB23	.400	attend club meetings
ELHB24	.317	attend church socials
ELHB39	.300	go to plays, concerts

FACTOR III (4.9) Specific Sports

ELHB47	.669	play on baseball team
ELHB45	.642	play on football team
ELHB46	.610	play on basketball team

FACTOR IV (4.2) Musical Orientation

ELHB10	.819	practice music
ELHB43	.795	play in band
ELHB41	.449	make solo performances

FACTOR V (3.3) Personal Appearance

ELHB35	.789	care for hair
ELHB36	.783	personal grooming
ELHB37	.617	care for clothes

FACTOR VI (3.2) Mechanical Orientation

ELHB01	.756	repair things
ELHB05	.461	electronic equipment
ELHB07	.412	build things

FACTOR VII (2.7) Wander Around

ELHB33	.666	look in stores
ELHB32	.505	do personal shopping

FACTOR VIII (2.5) Family/Home Orientation

ELHB15	.620	cook for family
ELHB03	.531	practice recipes
ELHB02	.353	sew

FACTOR IX (2.4) Family/Home Orientation

ELHB14	.556	clean house
ELHB13	.369	take care of siblings
ELHB15	.331	cook for family

---

[a] The sample size (pairwise-present) is 1430-1438. Fifteen factors had eigenvalues greater than or equal to 1.00, and accounted for 51.4% of the total variance. The nine factors selected accounted for 38.9% of the total variance. The oblique solution resulted in inter-factor correlations of less than .30 in absolute magnitude among the nine factors selected.

[b] All 54 "ELHB" variables were included in this factor analysis; these represented "active" hobbies or activities. All "reading" and "listening" items ("ELRD," "ELRR") were excluded. Numbers in parentheses are the percents of total variance accounted for by each factor.

Table C-4 Factor Structure for Active Interests of White Females, 7th Grade[a,b]

FACTOR I (11.0) General Sports		
SVHB18	.684	play individual sports
SVHB19	.625	practice sports on own
SVHB21	.388	play outdoor group sports
SVHB25	.334	attend athletic events

FACTOR II (5.7) Musical Orientation		
SVHB10	.640	practice music
SVHB43	.606	play in band
SVHB41	.458	make solo performances
SVHB39	.316	go to plays, concerts

FACTOR III (4.1) Specific Sports		
SVHB47	.709	play on baseball team
SVHB46	.459	play on basketball team
SVHB48	.458	play on track team
SVHB45	.387	play on football team

FACTOR IV (3.6) Wander Around		
SVHB16	.412	ride on bicycle
SVHB34	.338	go to the store
SVHB21	.311	play outdoor group sports

FACTOR V (3.2) Family/Home Orientation		
SVHB15	.570	cook for family
SVHB13	.40[illegible]	take care of siblings
SVHB03	.405	practice recipes
SVHB14	.366	clean house

FACTOR VI (3.1) Social Life--Opposite Sex		
SVHB28	.588	go to dances
SVHB29	.571	go on dates
SVHB26	.320	attend movies

FACTOR VII (2.7) Personal Appearance		
SVHB35	.708	care for hair
SVHB36	.703	personal grooming
SVHB37	.549	care for clothes

FACTOR VIII (2.5) Social Life--Same Sex		
SVHB31	.560	loaf with friends
SVHB38	.458	talk on telephone
SVHB30	.327	ride around in cars
SVHB33	.319	look in stores

FACTOR IX (2.4) School Activities		
SVHB54	.531	miscellaneous publications
SVHB53	.435	work on yearbook

---

[a] Sample size is 1219. Fourteen factors had eigenvalues greater than or equal to 1.00, and accounted for 48.5% of the total variance. The nine factors selected accounted for 38.2% of the total variance. The oblique solution resulted in inter-factor correlations of less than .32 in absolute magnitude among the nine factors selected.

[b] All 54 "SVHB" variables were included in this factor analysis; these represented "active" hobbies or activities. All "reading" and "listening" ("SVRD," "SVRR") items were excluded. Numbers in parentheses are the percents of total variance accounted for by each factor.

Table C-5 Factor Structure for Active Interests of White Females, 9th Grade[a,b]

FACTOR I (8.4) General Sports

NIHB19	.591	practice sports on own
NIHB18	.513	play individual sports

FACTOR II (6.4) Personal Appearance

NIHB36	.757	personal grooming
NIHB35	.647	care for hair
NIHB37	.544	care for clothes

FACTOR III (4.0) Family/Home Orientation

NIHB15	.567	cook for family
NIHB14	.544	clean house
NIHB13	.464	take care of siblings
NIHB03	.360	practice recipes
NIHB42	.307	babysit

FACTOR IV (3.7) Artistic Orientation

NIHB40	.485	act in plays
NIHB39	.380	go to plays, concerts
NIHB09	.320	paint, draw
NIHB11	.303	write poetry, stories

FACTOR V (3.1) Specific Sports

NIHB47	.773	play on baseball team
NIHB46	.700	play on basketball team
NIHB48	.329	play on track team

FACTOR VI (2.9) Social Life

NIHB29	.548	go on dates
NIHB28	.479	go to dances
NIHB26	.384	attend movies
NIHB17	.364	ride on motorcycle
NIHB38	.321	talk on telephone

FACTOR VII (2.6) School Activities

NIHB52	.402	work on newspaper
NIHB53	.335	work on yearbook
NIHB50	.307	member of pep squad

FACTOR VIII (2.4) Musical Orientation

NIHB43	.750	play in band
NIHB10	.500	practice music
NIHB41	.407	make solo performances

FACTOR IX (2.4) School Activities

NIHB51	.362	school committees
NIHB38	.356	talk on telephone

---

[a] The sample size (pairwise-present) is 1538-1553. Sixteen factors had eigenvalues greater than or equal to 1.00, and accounted for 50.5% of the total variance. The nine factors selected accounted for 36.1% of the total variance. The oblique solution resulted in inter-factor correlations of less than .29 in absolute magnitude among the nine factors selected.

[b] All 54 "NIHB" variables were included in this factor analysis; these represented "active" hobbies or activities. All "reading" and "listening" items ("NIRD," "NIRR") were excluded. Numbers in parentheses are the percents of total variance accounted for by each factor.

Table C-6 Factor Structure for Active Interests of White Females, 11th Grade[a,b]

FACTOR I (8.4) General Sports		
ELHB19	.691	practice sports on own
ELHB18	.497	play individual sports
ELHB49	.300	play on miscellaneous teams

FACTOR II (7.0) Social Life		
ELHB29	.664	go on dates
ELHB26	.495	attend movies
ELHB17	.422	ride on motorcycle
ELHB30	.385	ride around in cars
ELHB28	.333	go to dances
ELHB38	.308	talk on telephone

FACTOR III (4.6) Family/Home Orientation		
ELHB15	.780	cook for family
ELHB14	.513	clean house
ELHB03	.452	practice recipes

FACTOR IV (3.9) Specific Sports		
ELHB47	.763	play on baseball team
ELHB46	.753	play on basketball team
ELHB45	.484	play on football team
ELHB48	.322	play on track team

FACTOR V (3.3) Artistic Orientation		
ELHB11	.460	write poetry, stories
ELHB04	.422	work on collections
ELHB09	.385	paint, draw

FACTOR VI (2.9) General Sports		
ELHB21	.410	play outdoor group sports
ELHB22	.357	play indoor table games

FACTOR VII (2.7) Personal Appearance		
ELHB36	.841	personal grooming
ELHB35	.597	care for hair
ELHB37	.521	care for clothes

FACTOR VIII (2.6) Musical Orientation		
ELHB10	.750	practice music
ELHB43	.527	play in band
ELHB41	.356	make solo performances

FACTOR IX (2.3) Wander Around		
ELHB33	.616	look in stores
ELHB32	.595	do personal shopping

---

[a] The sample size (pairwise-present) is 1641-1653. Sixteen factors had eigenvalues greater than or equal to 1.00, and accounted for 52.1% of the total variance. The nine factors selected accounted for 37.7% of the total variance. The oblique solution resulted in inter-factor correlations of less than .36 in absolute magnitude among the nine factors selected.

[b] All 54 "ELHB" variables were included in this factor analysis; these represented "active" hobbies or activities. All "reading" and "listening" items ("ELRD," "ELRR") were excluded. Numbers in parentheses are the percents of total variance accounted for by each factor.

Table C-7 Factor Structure for Active Interests of Black Males, 7th Grade[a,b]

FACTOR I (10.8) Mechanical Orientation

SVHB30	.623	ride around in cars
SVHB07	.458	build things

FACTOR II (5.8) School Activities

SVHB53	.789	work on yearbook
SVHB54	.512	miscellaneous publications
SVHB50	.502	member of pep squad

FACTOR III (4.3) Specific Sports

SVHB45	.729	play on football team
SVHB47	.647	play on baseball team
SVHB48	.501	play on track team
SVHB46	.470	play on basketball team

FACTOR IV (4.0) Personal Appearance

SVHB35	.707	care for hair
SVHB36	.642	personal grooming
SVHB37	.339	care for clothes

FACTOR V (3.4) Mechanical Orientation

SVHB08	.766	take, develop pictures
SVHB06	.455	build models

FACTOR VI (3.3) Musical Orientation

SVHB43	.743	play in band
SVHB10	.517	practice music
SVHB41	.319	make solo performances

FACTOR VII (3.1) Artistic Orientation

SVHB40	.646	act in plays
SVHB39	.315	go to plays, concerts

FACTOR VIII (2.8) Mechanical Orientation

SVHB05	.723	electronic equipment
SVHB04	.347	work on collections

FACTOR IX (2.8) Artistic Orientation

SVHB09	.485	paint, draw
SVHB11	.449	write poetry, stories
SVHB27	.382	roller/ice skate

---

[a] Sample size is 261. Twenty factors had eigenvalues greater than or equal to 1.00, and accounted for 64.9% of the total variance. The nine factors selected accounted for 40.3% of the total variance. The oblique solution resulted in inter-factor correlations of less than .20 in absolute magnitude among the nine factors selected.

[b] All 54 "SVHB" variables were included in this factor analysis; these represented "active" hobbies or activities. All "reading" and "listening" items ("SVRD," "SVRR") were excluded. Numbers in parentheses are the percents of total variance accounted for by each factor.

Table C-8 Factor Structure for Active Interests of Black Males, 9th Grade[a,b]

FACTOR I	(10.8)	Social Life
NIHB38	.626	talk on telephone
NIHB29	.489	go on dates
NIHB12	.423	write letters
NIHB28	.346	go to dances
NIHB01	.330	repair things
NIHB30	.311	ride around in cars

FACTOR II	(5.6)	Musical Orientation
NIHB43	.728	play in band
NIHB10	.667	practice music
NIHB41	.349	make solo performances

FACTOR III	(4.5)	Specific Sports
NIHB45	.756	play on football team
NIHB47	.631	play on baseball team
NIHB46	.605	play on basketball team
NIHB48	.550	play on track team

FACTOR IV	(3.7)	Family/Home Orientation
NIHB13	.567	take care of siblings
NIHB42	.501	babysit

FACTOR V	(3.2)	School Activities
NIHB53	.796	work on yearbook
NIHB50	.632	member of pep squad
NIHB54	.324	miscellaneous publications

FACTOR VI	(3.1)	Family/Home Orientation
NIHB15	.489	cook for family
NIHB03	.424	practice recipes

FACTOR VII	(2.8)	Personal Appearance
NIHB35	.768	care for hair
NIHB36	.513	personal grooming
NIHB37	.400	care for clothes

FACTOR VIII	(2.7)	Wander Around
NIHB34	.421	go to the store
NIHB33	.356	look in stores
NIHB32	.303	do personal shopping
NIHB16	.303	ride on bicycle

FACTOR IX	(2.5)	Social Life
NIHB26	.503	attend movies

---

[a] The sample size (pairwise-present) is 438-449. Seventeen factors had eigenvalues greater than or equal to 1.00, and accounted for 56.2% of the total variance. The nine factors selected accounted for 38.9% of the total variance. The oblique solution resulted in inter-factor correlations of less than .23 in absolute magnitude among the nine factors selected.

[b] All 54 "NIHB" variables were included in this factor analysis; these represented "active" hobbies or activities. All "reading" and "listening" items ("NIRD," "NIRR") were excluded. Numbers in parentheses are the percents of total variance accounted for by each factor.

Table C-9 Factor Structure for Active Interests of Black Males, 11th Grade[a,b]

FACTOR I	(9.8)	Social Life--Same Sex
ELHB30	.608	ride around in cars
ELHB31	.515	loaf with friends

FACTOR II	(6.4)	Community Orientation
ELHB42	.434	work as youth leader
ELHB41	.433	make solo performances,speeches
ELHB51	.350	work on school committees
ELHB40	.347	act in plays, debates
ELHB26	-.319	attend movies
ELHB23	.307	attend club meetings

FACTOR III	(4.6)	Sports
ELHB45	.741	play on football team
ELHB46	.719	play on basketball team
ELHB47	.570	play on baseball team
ELHB19	.368	practice sports on own
ELHB25	.302	attend athletic events

FACTOR IV	(4.1)	Social Life--Opposite Sex
ELHB29	.586	go on dates
ELHB38	.466	talk on telephone
ELHB28	.374	go to dances

FACTOR V	(3.5)	Personal Appearance
ELHB36	.776	personal grooming
ELHB35	.757	care for hair
ELHB37	.511	care for clothes

FACTOR VI	(3.3)	School Activities
ELHB53	.602	work on yearbook
ELHB54	.597	miscellaneous publications
ELHB52	.388	work on newspaper

FACTOR VII	(3.2)	Mechanical Orientation
ELHB05	.605	electronic equipment
ELHB01	.399	repair things

FACTOR VIII	(2.7)	Family/Home Orientation
ELHB03	.602	practice recipes
ELHB02	.493	sew
ELHB15	.424	cook for family

FACTOR IX	(2.6)	Community Orientation
ELHB24	.453	attend church socials
ELHB13	.306	take care of siblings

---

[a] The sample size (pairwise-present) is 441-451. Eighteen factors had eigenvalues greater than or equal to 1.00, and accounted for 58.9% of the total variance. The nine factors selected accounted for 40.2% of the total variance. The oblique solution resulted in inter-factor correlations of less than .21 in absolute magnitude among the nine factors selected.

[b] All 54 "ELHB" variables were included in this factor analysis; these represented "active" hobbies or activities. All "reading" and "listening" items ("ELRD," "ELRR") were excluded. Numbers in parentheses are the percents of total variance accounted for by each factor.

Table C-10 Factor Structure for Active Interests of Black Females, 7th Grade[a,b]

FACTOR I (12.3) Ambiguous

SVHB10	.447	practice music
SVHB02	.406	sew, knit

FACTOR II (5.3) Personal Appearance

SVHB35	.675	care for hair
SVHB37	.638	care for clothes
SVHB36	.627	personal grooming
SVHB34	.434	go to the store

FACTOR III (4.3) Family/Home Orientation

SVHB15	.655	cook for family
SVHB13	.505	take care of siblings
SVHB03	.462	practice recipes
SVHB14	.420	clean house
SVHB12	.316	write letters

FACTOR IV (3.9) Sports

SVHB38	.770	play on track team
SVHB47	.510	play on baseball team
SVHB49	.492	play on miscellaneous teams
SVHB46	.395	play on basketball team
SVHB19	.321	practice sports on own

FACTOR V (3.5) Mechanical Orientation

SVHB01	.740	repair things
SVHB05	.496	electronic equipment
SVHB29	.319	go on dates

FACTOR VI (3.1) Sports

SVHB20	.581	hunt, fish, hike
SVHB18	.403	play individual sports
SVHB06	.360	build models
SVHB21	.352	play outdoor group sports
SVHB19	.339	practice sports on own

FACTOR VII (3.0) Social Life

SVHB26	.713	attend movies
SVHB28	.477	go to dances
SVHB27	.335	roller/ice skate
SVHB38	.333	talk on telephone

FACTOR VIII (2.7) Ambiguous

SVHB52	.482	work on newspaper
SVHB27	.345	roller/ice skate
SVHB07	-.300	build things

FACTOR IX (2.6) School Activities

SVHB53	.722	work on yearbook
SVHB45	.381	play on football team

---

[a] Sample size is 302. Eighteen factors had eigenvalues greater than or equal to 1.00, and accounted for 60.4% of the total variance. The nine factors selected accounted for 40.9% of the total variance. The oblique solution resulted in inter-factor correlations of less than .26 in absolute magnitude among the nine factors selected.

[b] All 54 "SVHB" variables were included in this factor analysis; these represented "active" hobbies or activities. All "reading" or "listening" items ("SVRD," "SVRR") were excluded. Numbers in parentheses are the percents of total variance accounted for by each factor.

Table C-11 Factor Structure for Active Interests of Black Females, 9th Grade[a,b]

FACTOR I (10.5) Family/Home Orientation

NIHB03	.382	practice recipes

FACTOR II (5.4) Social Life--Same Sex

NIHB31	.687	loaf with friends
NIHB30	.461	ride around in cars
NIHB32	.300	do personal shopping

FACTOR III (3.8) Personal Appearance

NIHB36	.688	personal grooming
NIHB35	.656	care for hair
NIHB37	.610	care for clothes
NIHB34	.413	go to the store

FACTOR IV (3.5) Sports

NIHB47	.736	play on baseball team
NIHB46	.733	play on basketball team

FACTOR V (3.2) School Activities

NIHB53	.703	work on yearbook
NIHB52	.571	work on newspaper

FACTOR VI (3.0) Ambiguous

NIHB29	-.584	go on dates
NIHB16	.345	ride on bicycle
NIHB21	.341	play outdoor group sports

FACTOR VII (2.8) Family/Home Orientation

NIHB13	.547	take care of siblings
NIHB42	.528	babysit

FACTOR VIII (2.7) Mechanical Orientation

NIHB08	.418	take, develop pictures

FACTOR IX (2.6) School Activities

NIHB51	.724	work on school committees
NIHB50	.367	member of pep squad

---

[a] The sample size (pairwise-present) is 500-512. Seventeen factors had eigenvalues greater than or equal to 1.00, and accounted for 54.7% of the total variance. The nine factors selected accounted for 37.4% of the total variance. The oblique solution resulted in inter-factor correlations of less than .25 in absolute magnitude among the nine factors selected.

[b] All 54 "NIHB" variables were included in this factor analysis; these represented "active" hobbies or activities. All "reading" and "listening" items ("NIRD," "NIRR") were excluded. Numbers in parentheses are the percents of total variance accounted for by each factor.

Table C-12 Factor Structure for Active Interests of Black Females, 11th Grade[a,b]

FACTOR I (11.0) Ambiguous

ELHB21	.661	play outdoor group sports
ELHB24	.358	attend church socials

FACTOR II (6.2) Social Life--Same Sex

ELHB31	.709	loaf with friends
ELHB30	.535	ride around in cars
ELHB38	.434	talk on telephone
ELHB33	.332	look in stores
ELHB32	.329	do personal shopping

FACTOR III (4.0) Sports

ELHB47	.763	play on baseball team
ELHB46	.748	play on basketball team
ELHB45	.431	play on football team
ELHB49	.420	play on miscellaneous teams

FACTOR IV (3.5) Personal Appearance

ELHB36	.728	personal grooming
ELHB35	.629	care for hair
ELHB37	.465	care for clothes

FACTOR V (3.2) Mechanical Orientation

ELHB05	.609	electronic equipment
ELHB01	.476	repair things
ELHB07	.472	build things

FACTOR VI (3.1) Artistic Orientation

ELHB39	.637	go to plays, concerts
ELHB40	.408	act in plays, debates
ELHB41	.312	make solo performances, speeches

FACTOR VII (2.9) Social Life--Opposite Sex

ELHB29	.511	go on dates
ELHB17	.408	ride on motorcycle
ELHB28	.400	go to dances

FACTOR VIII (2.6) Family/Home Orientation

ELHB15	.651	cook for family
ELHB14	.542	clean house
ELHB13	.340	take care of siblings

FACTOR IX (2.5) School Activities

ELHB53	.630	work on yearbook
ELHB52	.628	work on newspaper
ELHB54	.334	miscellaneous publications

---

[a] The sample size (pairwise-present) is 545-555. Seventeen factors had eigenvalues greater than or equal to 1.00, and accounted for 56.1% of the total variance. The nine factors selected accounted for 39.1% of the total variance. The oblique solution resulted in inter-factor correlations of less than .26 in absolute magnitude among the nine factors selected.

[b] All 54 "ELHB" variables were included in this factor analysis; these represented "active" hobbies or activities. All "reading" and "listening" items ("ELRD," "ELRR") were excluded. Numbers in parentheses are the percents of total variance accounted for by each factor.

Table C-13

Factor Structure for Passive Interests of White Males, 7th Grade[a,b]

FACTOR I	(11.1)	Books
SVRD01	.547	read history books
SVRD04	.519	read adventure books
SVRD07	.384	read classical fiction
SVRD03	.304	read religious books

FACTOR II	(7.7)	General Television
SVTV04	.542	comedy programs
SVTV10	.482	cartoon programs
SVTV09	.472	quiz shows
SVTV02	.448	westerns, adventure shows
SVTV11	.408	movie features
SVTV03	.356	variety programs
SVTV01	.335	detective, mystery shows

FACTOR III	(5.3)	Sports
SVTV12	.606	sports events on TV
SVRD13	.329	read sports magazines

FACTOR IV	(5.1)	Comics
SVRD18	.548	comics in newspaper
SVRD11	.542	read comic books

FACTOR V	(4.6)	Serious Media
SVTV07	.706	documentary programs TV
SVTV08	.458	educational programs TV
SVTV13	.412	news reports TV
SVRD21	.367	news, editorials in paper

FACTOR VI	(3.5)	Popular Culture
SVTV05	.647	teenage music programs TV
SVRR01	.600	popular music on radio, stereo

FACTOR VII	(3.4)	Society
SVRD20	.666	society section newspaper

FACTOR VIII	(3.0)	Mechanical
SVRD02	.812	read repair books
SVRD12	.356	read mechanical magazines

FACTOR IX	(2.9)	Miscellaneous Reading
SVRD15	.541	read general magazines

---

[a] Sample size is 1030. Eleven factors had eigenvalues greater than or equal to 1.00, and accounted for 52.1% of the total variance. The nine factors selected accounted for 46.6% of the total variance. The oblique solution resulted in inter-factor correlations of less than .32 in absolute magnitude among the nine factors selected.

[b] Variables included in this factor analysis were 13 "SVTV" items, 3 "SVRR" items, and 21 "SVRD" items. Numbers in parentheses are the percents of total variance accounted for by each factor.

Table C-14

Factor Structure for Passive Interests of White Males, 9th Grade[a,b]

FACTOR I (10.3) Serious Media

NITV07	.679	documentary programs TV
NITV08	.502	educational programs TV
NITV06	.398	drama, specials TV
NITV13	.396	news reports on TV
NIRD21	.369	news, editorials in paper

FACTOR II (7.9) General Television

NITV02	.513	western, adventure shows
NITV04	.451	comedy programs
NITV01	.450	detective, mystery shows
NITV11	.448	movie features
NITV10	.340	cartoon programs

FACTOR III (5.6) Sports

NIRD13	.665	read sports magazines
NIRD10	.573	read sports magazines
NIRD19	.512	sports section in paper
NITV12	.457	sports events on TV

FACTOR IV (4.6) Newspaper

NIRD18	.560	comics in newspaper
NIRD21	.391	news, editorials in paper
NIRD11	.386	comic books
NIRD19	.326	sports section in paper

FACTOR V (4.4) Mechanical

NIRD12	.578	read mechanical magazines
NIRD02	.568	read repair books
NIRD05	.350	read science books

FACTOR VI (3.8) Popular Culture

NIRR01	.634	popular music on radio,stereo
NITV05	.514	teenage music programs TV

FACTOR VII (3.4) Books

NIRD03	.511	read religious books

FACTOR VIII (3.1) Books

NIRD01	.489	read history books
NIRD04	.440	read adventure books
NIRD07	.343	read classical fiction
NITV10	-.325	cartoons on TV

FACTOR IX (3.0) Ambiguous

NIRR02	.584	classical music
NIRD16	.408	read science magazines

---

[a] The sample size (pairwise-present) is 1290-1297. Eleven factors had eigenvalues greater than or equal to 1.00, and accounted for 51.9% of the total variance. The nine factors selected accounted for 46.2% of the total variance. The oblique solution resulted in inter-factor correlations of less than .27 in absolute magnitude among the nine factors selected.

[b] Variables included in this factor analysis were 13 "NITV" items, 3 "NIRR" items, and 21 "NIRD" items. Numbers in parentheses are the percents of total variance accounted for by each factor.

Table C-15

Factor Structure for Passive Interests of White Males, 11th Grade[a,b]

FACTOR I	(11.3)	Serious Media
ELTV07	.638	documentary programs TV
ELTV08	.619	educational programs TV
ELTV06	.552	drama, specials on TV
ELRR02	.388	classical music
ELTV13	.308	news programs on TV

FACTOR II	(8.7)	General Television
ELTV01	.620	detective, mystery shows
ELTV02	.615	western, adventure shows
ELTV04	.533	comedy programs
ELTV11	.425	movie features
ELTV03	.355	variety programs
ELTV09	.322	quiz shows

FACTOR III	(6.1)	Sports
ELRD13	.729	read sports magazines
ELRD19	.628	sports section in paper
ELTV12	.586	sports events on TV
ELRD10	.532	read sports magazines

FACTOR IV	(4.8)	Mechanical
ELRD02	.657	read repair books
ELRD12	.504	read mechanical magazines
ELRD05	.394	read science books

FACTOR V	(3.9)	Newspaper
ELRD18	.537	comics in paper
ELRD19	.422	sports in newspaper
ELRD21	.346	news, editorials in paper

FACTOR VI	(3.6)	Books
ELRD07	.597	read classical fiction
ELRD04	.552	read adventure books
ELRD01	.536	read history books
ELRD03	.302	read religious books

FACTOR VII	(3.4)	Comics
ELTV10	.634	cartoons on TV
ELRD11	.608	read comic books

FACTOR VIII	(3.3)	Society
ELRD20	.630	read society section in paper

FACTOR IX	(3.0)	Ambiguous
ELTV13	.421	news reports on TV
ELRR01	.418	popular music radio, stereo

---

[a] The sample size (pairwise-present) is 1431-1438. Eleven factors had eigenvalues greater than or equal to 1.00, and accounted for 53.8% of the total variance. The nine factors selected accounted for 48.2% of the total variance. The oblique solution resulted in inter-factor correlations of less than .25 in absolute magnitude among the nine factors selected.

[b] Variables included in this factor analysis were 13 "ELTV" items, 3 "ELRR" items, and 21 "ELRD" items. Numbers in parentheses are the percents of total variance accounted for by each factor.

Table C-16

Factor Structure for Passive Interests of White Females, 7th Grade[a,b]

FACTOR I (11.7) Serious Media

SVTV08	.426	educational programs TV
SVTV07	.374	documentary programs TV
ELRD21	.338	news, editorials in paper
ELTV13	.300	news reports on TV

FACTOR II (8.5) General Television

SVTV03	.574	variety programs
SVTV04	.443	comedy programs
SVTV09	.407	quiz shows

FACTOR III (5.3) Comics

SVRD11	.640	read comic books
SVRD18	.565	comics in newspaper
SVTV10	.331	cartoons on TV

FACTOR IV (4.6) Popular Culture

SVRR01	.682	popular music radio, stereo
SVTV05	.600	teenage music programs TV

FACTOR V (4.0) Books

SVRD05	.559	read science books
SVRD02	.417	read repair books
SVRD06	.407	read music, art books
SVRD07	.351	read classical fiction
SVRD03	.341	read religious books
SVRD01	.318	read history books

FACTOR VI (3.6) Sports

SVTV12	.677	sports events on TV
SVRD19	.604	sports section in paper
SVRD13	.383	read sports magazines

FACTOR VII (3.2) Books

SVRD04	.601	read adventure books
SVRD01	.311	read history books

FACTOR VIII (3.1) Magazines

SVRD15	.554	read general magazines
SVRD14	.529	read women's magazines
SVRD20	.458	read society section in paper
SVRD08	.333	read teenage magazines
SVRD21	.312	news, editorials in paper

FACTOR IX (2.9) Serious Media

SVRR02	.524	classical music
SVTV06	.433	drama, specials TV

---

[a] Sample size is 1219. Eleven factors had eigenvalues greater than or equal to 1.00, and accounted for 52.4% of the total variance. The nine factors selected accounted for 46.9% of the total variance. The oblique solution resulted in inter-factor correlations of less than .36 in absolute magnitude among the nine factors selected.

[b] Variables included in this factor analysis were 13 "SVTV" items, 3 "SVRR" items, and 21 "SVRD" items. Numbers in parentheses are the percents of total variance accounted for by each factor.

Table C-17

Factor Structure for Passive Interests of White Females, 9th Grade[a,b]

FACTOR I	(11.2)	Magazines
NIRD15	.560	read general magazines
NIRD16	.523	read science magazines
NIRD21	.308	news, editorials in paper

FACTOR II	(8.5)	General Television
NITV02	.562	western, adventure shows
NITV04	.490	comedy programs
NITV01	.437	detective, mystery shows
NITV06	.410	drama, specials
NITV11	.354	movie features

FACTOR III	(5.7)	Popular Culture
NITV05	.658	teenage music programs TV
NIRR01	.601	popular music radio, stereo
NIRD08	.398	teenage magazines
NITV03	.311	variety programs TV

FACTOR IV	(4.5)	Books
NIRD06	.477	read music, art books
NIRD02	.468	read repair books
NIRD05	.380	read science books

FACTOR V	(3.9)	Sports
NIRD19	.729	sports section in paper
NITV12	.648	sports events TV
NIRD13	.367	read sports magazines

FACTOR VI	(3.8)	Newspaper
NIRD18	.468	comics in newspaper
NIRD20	.459	society section in paper

FACTOR VII	(3.3)	Serious Media
NITV07	.518	documentary programs TV
NITV08	.517	educational programs TV
NITV13	.374	news reports on TV

FACTOR VIII	(3.0)	Miscellaneous Reading
NIRD04	.561	read adventure books
NIRD10	.328	read detective magazines

FACTOR IX	(2.9)	Serious Media
NIRR02	.394	classical music
NITV06	.348	drama, specials TV

---

[a] The sample size (pairwise-present) is 1543-1554. Ten factors had eigenvalues greater than or equal to 1.00, and accounted for 49.6% of the total variance. The nine factors selected accounted for 46.8% of the total variance. The oblique solution resulted in inter-factor correlations of less than .31 in absolute magnitude among the nine factors selected.

[b] Variables included in this factor analysis were 13 "NITV" items, 3 "NIRR" items, and 21 "NIRD" items. Numbers in parentheses are the percents of total variance accounted for by each factor.

Table C-18

Factor Structure for Passive Interests of White Females, 11th Grade[a,b]

FACTOR I (11.4) Serious Media

ELTV07	.714	documentary programs TV
ELTV08	.657	educational programs TV
ELTV13	.407	news reports on TV
ELTV06	.334	drama, specials on TV
ELRD21	.326	news, editorials in paper

FACTOR II (9.6) General Television

ELTV04	.599	comedy programs
ELTV03	.468	variety programs
ELTV11	.345	movie features
ELTV09	.322	quiz shows

FACTOR III (5.6) Popular Culture

ELRD08	.509	teenage magazines
ELTV05	.388	teenage music programs TV
ELRR01	.355	popular music radio, stereo
ELRD14	.331	read women's magazines

FACTOR IV (4.5) Comics

ELRD11	.659	read comic books
ELTV10	.561	cartoons on TV

FACTOR V (3.7) Sports

ELRD19	.676	sports section in paper
ELTV12	.634	sports events on TV
ELRD13	.476	read sports magazines

FACTOR VI (3.3) Books

ELRD04	.530	read adventure books
ELRD07	.516	read classical fiction
ELRD01	.488	read history books

FACTOR VII (3.1) Newspaper

ELRD18	.408	comics in newspaper
ELRD20	.354	society section in paper
ELRD19	.328	sports section in paper

FACTOR VIII (3.0) Magazines

ELRD10	-.450	detective, romance magazines
ELRD16	.309	science magazines
ELRD15	.301	general magazines
ELTV05	-.301	teenage music programs TV

FACTOR IX (2.9) Magazines

ELRD15	.326	general magazines

---

[a] The sample size (pairwise-present) is 1642-1653. Ten factors had eigenvalues greater than or equal to 1.00, and accounted for 49.9% of the total variance. The nine factors selected accounted for 47.2% of the total variance. The oblique solution resulted in inter-factor correlations of less than .38 in absolute magnitude among the nine factors selected.

[b] Variables included in this factor analysis were 13 "ELTV" items, 3 "ELRR" items, and 21 "ELRD" items. Numbers in parentheses are the percents of total variance accounted for by each factor.

Table C-19

Factor Structure for Passive Interests of Black Males, 7th Grade[a,b]

FACTOR I	(12.3)	Books
SVRD05	.660	read science books
SVRD06	.434	read music, art books
SVRD02	.365	read repair books

FACTOR II	(7.5)	General Television
SVTV02	.578	western, adventure shows
SVTV04	.541	comedy programs
SVTV10	.485	cartoon programs
SVTV01	.441	detective, mystery shows
SVTV11	.311	movie features

FACTOR III	(6.0)	Serious Media
SVRR02	.640	classical music
SVTV06	.583	drama, specials on TV
SVTV08	.455	educational programs TV
SVTV07	.454	documentary programs TV

FACTOR IV	(4.5)	Miscellaneous Reading
SVRD21	.791	news, editorials in paper
SVRD15	.392	general magazines

FACTOR V	(4.3)	Sports
SVRD19	.771	sports section in paper
SVTV12	.315	sports events on TV

FACTOR VI	(4.2)	Popular Culture
SVTV05	.594	teenage music programs TV
SVRR01	.583	popular music radio, stereo

FACTOR VII	(3.9)	Magazines
SVRD13	.614	read sports magazines
SVRD09	.459	read movie, TV magazines
SVRD12	.454	read mechanical magazines
SVRD10	.440	read detective magazines
SVRD14	.315	read men's magazines

FACTOR VIII	(3.5)	Popular Culture
SVRD08	.806	read teenage magazines

FACTOR IX	(3.3)	Serious Media
SVTV13	.583	news reports on TV

---

[a] Sample size is 261. Thirteen factors had eigenvalues greater than or equal to 1.00, and accounted for 61.2% of the total variance. The nine factors selected accounted for 49.5% of the total variance. The oblique solution resulted in inter-factor correlations of less than .32 in absolute magnitude among the nine factors selected.

[b] Variables included in this factor analysis were 13 "SVTV" items, 3 "SVRR" items, and 21 "SVRD" items. Numbers in parentheses are the percents of total variance accounted for by each factor.

Table C-20

Factor Structure for Passive Interests of Black Males, 9th Grade[a,b]

FACTOR I	(13.6)	Books
NIRD05	.635	read science books
NIRD02	.497	read repair books
NIRD06	.429	read music, art books
NIRD03	.413	read religious books

FACTOR II	(7.6)	General Television
NITV04	.569	comedy programs
NITV02	.483	western, adventure shows
NITV11	.481	movie features
NITV10	.343	cartoons on TV
NITV01	.318	detective, mystery shows

FACTOR III	(5.0)	Society
NIRD17	.690	read literary magazines
NIRD20	.669	society section in paper

FACTOR IV	(4.8)	Serious Media
NITV08	.608	educational programs TV
NIRR02	.492	classical music
NITV07	.434	documentary programs TV
NITV06	.411	drama, specials on TV

FACTOR V	(4.2)	Comics
NIRD18	.734	comics in newspaper
NIRD11	.587	read comic books

FACTOR VI	(3.9)	Magazines
NIRD14	.556	read men's magazines
NIRD15	.453	read general magazines
NIRD08	.408	read teenage magazines
NIRD16	.366	read scientific magazines
NIRD12	.339	read mechanical magazines

FACTOR VII	(3.7)	Sports
NITV12	.682	sports events on TV
NIRD19	.526	sports section in paper

FACTOR VIII	(3.3)	Popular Culture
NIRR01	.596	popular music radio, stereo
NITV05	.517	teenage music programs TV

FACTOR IX	(3.0)	Ambiguous
NITV01	.397	detective, mystery shows TV
NIRD09	-.327	read movie, TV magazines

---

[a] The sample size (pairwise-present) is 433-449. Eleven factors had eigenvalues greater than or equal to 1.00, and accounted for 54.8% of the total variance. The nine factors selected accounted for 49.1% of the total variance. The oblique solution resulted in inter-factor correlations of less than .33 in absolute magnitude among the nine factors selected.

[b] Variables included in this factor analysis were 13 "NITV" items, 3 "NIRR" items, and 21 "NIRD" items. Numbers in parentheses are the percents of total variance accounted for by each factor.

Table C-21

Factor Structure for Passive Interests of Black Males, 11th Grade[a,b]

FACTOR I (13.9) Mechanical

ELRD02	.601	read repair books
ELRD05	.558	read science books
ELRD12	.533	read mechanical magazines
ELRD16	.434	read science magazines

FACTOR II (8.0) General Television

ELTV02	.718	western, adventure shows
ELTV01	.621	detective, mystery shows

FACTOR III (6.3) Sports

ELRD19	.780	sports section in paper
ELTV12	.660	sports events on TV
ELRD13	.588	read sports magazines
ELRD10	.439	read sports magazines
ELRD04	.336	read sports, adventure books

FACTOR IV (4.9) Comics

ELRD11	.597	read comic books
ELRD18	.548	comic section in paper
ELTV10	.402	cartoons on TV

FACTOR V (4.2) Miscellaneous Reading

ELRD12	.629	news, editorials in paper
ELRD15	.522	read general magazines
ELRD07	.367	read classical fiction

FACTOR VI (3.7) Society

ELRD20	.766	society section in paper
ELRD17	.503	read literary magazines

FACTOR VII (3.5) General Television

ELTV03	.538	variety programs
ELTV06	.521	drama, specials
ELTV04	.448	comedy programs
ELTV11	.335	movie features

FACTOR VIII (3.4) Books

ELRD03	.629	read religious books
ELRD06	.401	read music, art books
ELRR02	.380	classical music
ELRD01	.302	read history books

FACTOR IX (3.1) Serious Media

ELTV08	.646	educational programs TV
ELTV07	.494	documentary programs TV

---

[a] The sample size (pairwise-present) is 441-451. Eleven factors had eigenvalues greater than or equal to 1.00, and accounted for 56.8% of the total variance. The nine factors selected accounted for 51.1% of the total variance. The oblique solution resulted in inter-factor correlations of less than .31 in absolute magnitude among the nine factors selected.

[b] Variables included in this factor analysis were 13 "ELTV" items, 3 "ELRR" items, and 21 "ELRD" items. Numbers in parentheses are the percents of total variance accounted for by each factor.

Table C-22

Factor Structure for Passive Interests of Black Females, 7th Grade[a,b]

FACTOR I (12.6) Miscellaneous Reading

SVRD09	.563	read movie, TV magazines
SVRD13	.447	read sports magazines
SVRD06	.424	read music, art books
SVRD10	.422	read detective magazines
SVRD02	.309	read repair books
SVRD17	.306	read literary magazines

FACTOR II (7.1) General Television

SVTV09	.494	quiz shows
SVTV10	.476	cartoon programs
SVTV02	.474	western, adventure shows
SVTV04	.466	comedy programs
SVTV01	.430	detective, mystery shows
SVTV11	.340	movie features

FACTOR III (5.8) Serious Media

SVTV08	.572	educational programs TV
SVTV07	.462	documentary programs TV
SVRR02	.428	classical music
SVTV06	.391	drama, specials TV

FACTOR IV (4.5) Comics

SVRD11	.688	read comic books
SVRD18	.644	comic section in paper

FACTOR V (4.2) Popular Culture

SVTV05	.785	teenage music programs TV
SVRR01	.337	popular music radio, stereo

FACTOR VI (3.8) Books

SVRD03	.833	read religious books

FACTOR VII (3.6) Sports

SVRD19	.791	sports section in paper

FACTOR VIII (3.6) Books

SVRD04	.543	read adventure books

FACTOR IX (3.1) Miscellaneous Reading

SVRD16	.826	read science magazines

---

[a] Sample size is 302. Thirteen factors had eigenvalues greater than or equal to 1.00, and accounted for 59.9% of the total variance. The nine factors selected accounted for 48.4% of the total variance. The oblique solution resulted in inter-factor correlations of less than .28 in absolute magnitude among the nine factors selected.

[b] Variables included in this factor analysis were 13"SVTV" items, 3 "SVRR" items, and 21 "SVRD" items. Numbers in parentheses are the percents of total variance accounted for by each factor.

Table C-23

Factor Structure for Passive Interests of Black Females, 9th Grade[a,b]

FACTOR I (11.7) Books

NIRD05	.595	read science books
NIRD01	.558	read history books
NIRD16	.412	read science magazines

FACTOR II (7.3) General Television

NITV01	.665	detective, mystery shows
NITV02	.559	western, adventure shows

FACTOR III (5.6) Serious Media

NITV07	.611	documentary programs TV
NITV08	.606	educational programs TV
NITV13	.429	news reports on TV
NIRR02	.362	classical music
NITV09	.300	quiz, participation shows

FACTOR IV (4.1) Comics

NIRD18	.721	comic section in paper
NIRD11	.534	read comic books

FACTOR V (3.9) Sports

NIRD19	.713	sports section in paper
NITV12	.431	sports events on TV
NIRD13	.396	read sports magazines

FACTOR VI (3.6) Comics

NITV10	.689	cartoons on TV

FACTOR VII (3.4) Mechanical

NIRD02	.678	read repair books

FACTOR VIII (3.3) Ambiguous

NIRD10	.344	read detective magazines
NITV03	-.301	variety programs on TV

FACTOR IX (3.2) Miscellaneous Reading

NIRD17	.517	read literary magazines

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[a] The sample size (pairwise-present) is 504-512. Thirteen factors had eigenvalues greater than or equal to 1.00, and accounted for 57.3% of the total variance. The nine factors selected accounted for 46.0% of the total variance. The oblique solution resulted in inter-factor correlations of less than .29 in absolute magnitude among the nine factors selected.

[b] Variables included in this factor analysis were 13 "NITV" items, 3 "NIRR" items, and 21 "NIRD" items. Numbers in parentheses are the percents of total variance accounted for by each factor.

Table C-24

Factor Structure for Passive Interests of Black Females, 11th Grade[a,b]

FACTOR I	(13.0)	Serious Media
ELTV06	.521	drama, specials TV
ELRR02	.412	classical music
ELTV07	.393	documentary programs TV
ELTV04	.371	comedy programs on TV
ELRD07	.340	read classical fiction

FACTOR II	(8.2)	General Television
ELTV02	.534	western, adventure shows
ELTV01	.510	detective, mystery shows
ELTV09	.420	quiz shows
ELTV11	.409	movie features
ELTV04	.338	comedy programs
ELTV10	.329	cartoon programs
ELTV03	.305	variety programs

FACTOR III	(5.5)	Magazines
ELRD10	.605	detective magazines
ELRD09	.330	movie, TV magazines

FACTOR IV	(4.9)	Comics
ELRD18	.670	comic section in paper
ELRD11	.649	read comic books
ELTV10	.340	cartoon programs on TV

FACTOR V	(4.3)	Sports
ELRD19	.604	sports section in paper
ELTV12	.557	sports events on TV
ELRD13	.442	read sports magazines

FACTOR VI	(3.4)	Miscellaneous Reading
ELRD05	.521	read science books
ELRD17	.488	read literary magazines
ELRD06	.375	read music, art books
ELRD16	.314	read science magazines

FACTOR VII	(3.3)	Newspaper
ELRD20	.528	society section in paper
ELRD14	.377	read women's magazines
ELRD21	.357	news, editorials in paper
ELTV10	-.331	cartoon programs on TV

FACTOR VIII	(3.2)	Serious Media
ELTV08	.383	educational programs TV
ELTV07	.342	documentary programs TV
ELTV04	-.329	comedy programs on TV

FACTOR IX	(3.1)	Ambiguous
ELRR01	.673	popular music radio, stereo
ELTV13	.425	news reports on TV

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[a] The sample size (pairwise-present) is 550-555. Eleven factors had eigenvalues greater than or equal to 1.00, and accounted for 54.5% of the total variance. The nine factors selected accounted for 48.8% of the total variance. The oblique solution resulted in inter-factor correlations of less than .27 in absolute magnitude among the nine factors selected.

[b] Variables included in this factor analysis were 13 "ELTV" items, 3 "ELRR" items, and 21 "ELRD" items. Numbers in parentheses are the percents of total variance accounted for by each factor.

Appendix D -- Response Patterns on the Work Description Items by Work Status and School Enrollment Status

In Chapter 11 we made mention of some uncertainties regarding the identification of full-time workers and the implications of being presently enrolled in college owing to the use of non-parallel response categories across critical questionnaire items. These complications dictated our comparison of several worker-student groupings in the study of occupational returns and routines. This, we felt, was a properly cautious strategy, even though we are reasonably confident that the problems themselves are not especially severe. In particular, most of the people who responded to the work description section of the AEQ complied with the screening instructions and most of the students in the sample were not workers; and of those who were, many worked full-time. The part-time work of full-time students probably is quite different in character and career development significance than work as a primary commitment. It was our intention to focus on the latter, since we were interested primarily in early work history and career beginnings and trying to deal separately with both would be quite unwieldy. Fortunately, it does appear that most of the respondents who provided job descriptions were either not in school or were part-time students, and about 84 percent worked full-time (i.e., more than 30 hours a week). Tables D.1 through D.4 review our samples' characteristics along these lines.

The work description section of the AEQ was intended to be answered only by respondents presently employed twenty or more hours per week. Table D.1 checks on sample compliance with these instructions, at least

Table D.1 Response Patterns to the Work Description Section of the AEQ According to Self-Reports on Hours Worked Per Week for the Full AEQ Sample

	Hours Worked Per Week				
	48+	47-30	29-5	4-0	Total
answered work descriptors	84.4%	93.8	46.8	4.9	888 (47.0%)
didn't answer work descriptors	15.6	6.2	53.2	95.1	1001 (53.0)
Total	225 (11.9%)	689 (36.5)	280 (14.8)	695 (36.8)	1889

to the extent permitted by the available item responses. The vast majority of respondents working thirty or more hours did, as intended, provide job descriptions, while relatively few who were working four or fewer hours did so. The 34 of the latter who improperly responded represent only 1.8 percent of the total and 3.4 percent of those who provided job descriptions.

The respondents who worked from five to twenty-nine hours per week are our ambiguous cases, since the screening item for the job description section used twenty hours as a threshold. By a small margin, more of these workers skipped this section than answered it; however, it is impossible to tell who in this group did what they were supposed to do. Since we are concerned mainly with the integrity of the job data, those who answered but shouldn't have are more troublesome than the non-respondents. Their data will be retained in the analysis and taken to reflect career experiences that they probably don't.

In Tables D.2 - D.4 we piece together some circumstantial evidence on the severity of this ambiguity. College enrollment probably is the major full-time alternative to working in this age group, at least among men. The remaining tables examine how school attendance relates both to hours worked per week and patterns of response to the job description section of the AEQ. Through these tables we hope both to clarify who these five through twenty-nine hour workers are and to obtain a sense of the composition of our sample in terms of full-time worker/part-time student status and full-time student/part-time worker status. Because of our substantive interest in early career work experiences, we hope that the former will far outweigh the latter among those who provided job descriptions.

Table D.2 examines the college enrollment of our respondents broken down by hours worked per week and sex. For men the length of the work week discriminates enrollment probabilities quite well. Almost all men working fewer than thirty hours are enrolled in school, while a substantial majority of those with longer work weeks are not. In the critical (for our purposes) five to twenty-nine hour category, most respondents appear to be students holding down part-time jobs, with about ninety percent of the men in this group being enrolled in school (considered from another perspective, almost thirty percent of the students fall into this work category as contrasted with only about three percent of the non-students).

A somewhat more complicated pattern is observed for women, almost certainly a consequence of their greater family responsibilities, although in terms of the college enrollment of part-time workers they are very similar to men. Women's work-education patterns appear to differ from men's in two major respects. Far fewer full-time female workers (i.e., 30+ hours) are also enrolled in college (eleven percent compared with twenty-eight for men) and women are much more likely to be neither students nor workers (presumably full-time homemakers, about forty percent).

Overall, about sixteen percent of the sample falls into the part-time worker category and, among both men and women, most of these are college students (on the order of ninety percent). What remains to be

Table D.2 College Enrollment Status by Hours Worked Per Week for the Full AEQ Sample and by Sex[a]

Full Sample:	Hours Worked Per Week				
	48+	47-30	29-5	4-0	Total
Not enrolled in Jr. or 4-Yr. College	87.0%	80.9	10.3	28.5	854 (50.0%)
Presently enrolled in a Jr. or 4-year College	13.0	19.1	89.7	71.5	854 (50.0)
Total	177 (10.4%)	597 (35.0)	272 (15.9)	662 (38.8)	1708

Men:	Hours Worked Per Week				
	48+	47-30	29-5	4-0	Total
Not Enrolled	78.1%	68.4	4.3	8.2	234 (35.9%)
Enrolled	21.5	31.6	95.7	91.8	418 (64.1)
Total	96 (14.7%)	196 (30.1)	117 (17.9)	243 (37.3)	652

Women:	Hours Worked Per Week				
	48+	47-30	29-5	4-0	Total
Not Enrolled	97.5%	87.0	14.8	40.3	620 (58.7%)
Enrolled	2.5	13.0	85.2	59.7	436 (41.3)
Total	81 (7.7%)	401 (38.0)	155 (14.7)	419 (39.7)	1056

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[a] Vocational and business school enrollment is considered non-college in these tables.

determined is how many of these youth provided job descriptions. This will be done shortly, but first we present Table D.3, which provides a bit more detail on school enrollment patterns. This breakdown employs a somewhat more inclusive criterion of postsecondary schooling in that enrollment in a vocational program is given credit. It also distinguishes part-time from full-time attendance so that we can consider the trade-off between work and school commitments. These results are presented for the pooled-sex sample only, since the experiences of men and women in the most critical category, the part-time workers, are quite similar.

We find that among full-time workers school attendance is relatively infrequent overall and that when school is combined with work it is somewhat more likely to be on a part-time than a full-time basis. Among part-time workers, on the other hand, full-time enrollment is much more common, in fact even more so than among non-workers, many of whom also are non-students (i.e., presumably mainly homemakers). We still find, however, that even in this group almost twenty percent are either not enrolled in school or are attending only part-time. These probably are homemakers and workers toward the upper-end of the hours/week category. It will be interesting to see how many of these provided job descriptions compared with the full-time students, for their work situations are probably more relevant in terms of the issues at hand. About eighty-two percent, then, of the 272 part-time workers in the sample are full-time students. Table D.4 identifies how many of these provided job descriptions.

Among full-time workers and non-workers, response patterns to the job description of the AEQ are not very much influenced by school enrollment

Table D.3 Extent of Postsecondary Schooling by Hours Worked Per Week for the Full AEQ Sample[a]

School Enrollment	Hours Worked per Week				
	48+	47-30	29-5	4-0	Total
Not Enrolled	79.6%	73.7	8.1	25.1	769 (45.0%)
Enrolled Part-time	11.3	14.0	9.7	7.2	178 (10.4)
Enrolled 11+ Semester Hours	9.1	12.3	82.2	67.7	761 (44.6)
Total	177 (10.4%)	597 (35.0)	272 (15.9)	662 (38.8)	1708

---

[a] Vocational and business school enrollment is considered non-college in these tables.

status. As can be seen in Table D.4, the vast majority of the former and relatively few of the latter provided such descriptions. This, of course, is exactly what had been intended. Among part-time workers, however, youth not in school and youth enrolled only part-time are, as expected, somewhat more likely to provide job descriptions than are full-time students. In fact, a majority of both in the former categories do so, while only a minority of the full-time students do. It is likely, then, that more of the part-time and non-students are working near the upper limit of the hours spanned by this category (5-29) and, consequently, that their employment signifies more than merely part-time work to support school expenses. At the same time, however, the vast majority of part-time workers are full-time students (224 of 272). Their 42 percent response rate to the job description thus implies that, at the outer limit, a non-negligible 94 respondents from this group may be included in our analysis of work returns and routines, despite their not actually being employed in substantively meaningful (for our purposes -- e.g., career-beginnings or entry-level positions) jobs. Of course some unknown number of these youth may in fact be in relevant jobs, but with the limited information available to us this cannot be determined.

On balance, then, it seems that respondents were quite conscientious in following routing instructions and that most of the people included in our analysis of work routines and rewards are in the sorts of employment situations that had been intended. There is some ambiguity regarding the appropriateness of including full-time students who are part-time workers in these analyses, but these represent, at most, 94 of the

Table D.4 Response Patterns to the Work Description Section of the AEQ According to Self-Reports of Hours Worked Per Week and College Enrollment Status, for the Full AEQ Sample[a]

	% Providing Job Descriptions
Hours Worked: 48+	
Not in School	88.7 (N = 141)
Enrolled Part-Time	81.0 (N = 21)
Enrolled 11+ Semester Hours	93.3 (N = 15)
Hours Worked: 47-30	
Not in School	94.8 (N = 440)
Enrolled Part-Time	91.7 (N = 84)
Enrolled 11+ Semester Hours	91.8 (N = 73)
Hours Worked: 29-5	
Not in School	68.2 (N = 22)
Enrolled Part-Time	73.1 (N = 26)
Enrolled 11+ Semester Hours	42.0 (N = 224)
Hours Worked: 4-0	
Not in School	6.6 (N = 116)
Enrolled Part-Time	12.8 (N = 47)
Enrolled 11+ Semester Hours	3.3 (N = 449)

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[a] Vocational and business school enrollment is considered non-college in these tables.

approximately 1200 workers who constituted this analysis sample. It is quite probable that at least some of these 94 are in fact properly included in this part of the study. Overall, we are rather encouraged by the evidence in Tables D.1 through D.4 regarding the appropriateness of the sample selection criteria that we were able to employ.

APPENDIX[a]

Explanation of Data, People and Things

Much of the information in this publication is based on the premise that every job requires a worker to function in some degree to Data, People and Things. These relationships are identified and explained below. They appear in the form of three listings arranged in each instance from the relatively simple to the complex in such a manner that each successive relationship includes those that are simpler and excludes the more complex.[1] The identifications attached to these relationships are referred to as worker functions, and provide standard terminology for use in summarizing exactly what a worker does on the job.

A job's relationship to Data, People and Things can be expressed in terms of the lowest numbered function in each sequence. These functions taken together indicate the total level of complexity at which the worker performs. The fourth, fifth and sixth digits of the occupational code numbers reflect relationships to Data, People and Things, respectively.[2] These digits express a job's relationship to Data, People and Things by identifying the highest appropriate function in each listing as reflected by the following table:

	DATA (4th digit)		**PEOPLE (5th digit)**		**THINGS (6th digit)**
	0 Synthesizing		0 Mentoring		0 Setting-Up
HI	1 Coordinating	HI	1 Negotiating	HI	1 Precision Working
	2 Analyzing		2 Instructing		2 Operating-Controlling
	3 Compiling		3 Supervising		3 Driving-Operating
	4 Computing		4 Diverting		4 Manipulating
	5 Copying		5 Persuading		5 Tending
LO	6 Comparing	LO	6 Speaking-Signaling	LO	6 Feeding - Offbearing
			7 Serving		7 Handling
			8 Taking Instructions - Helping		

Definitions of Worker Functions

DATA: Information, knowledge, and conceptions, related to data, people, or things, obtained by observation, investigation, interpretation, visualization, and mental creation. Data are intangible and include numbers, words, symbols, ideas, concepts, and oral verbalization.

0 Synthesizing: Integrating analyses of data to discover facts and/or develop knowledge concepts or interpretations.

1 Coordinating: Determining time, place, and sequence of operations or action to be taken on the basis of analysis of data; executing determination and/or reporting on events.

2 Analyzing: Examining and evaluating data. Presenting alternative actions in relation to the evaluation is frequently involved.

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[1] As each of the relationships to People represents a wide range of complexity, resulting in considerable overlap among occupations, their arrangement is somewhat arbitrary and can be considered a hierarchy only in the most general sense.

[2] Only those relationships which are occupationally significant in terms of the requirements of the job are reflected in the code numbers. The incidental relationships which every worker has to Data, People, and Things, but which do not seriously affect successful performance of the essential duties of the job, are not reflected.

[a] Source, U.S. Department of Labor (1975).

3. Compiling: Gathering, collating, or classifying information about data, people, or things. Reporting and/or carrying out a prescribed action in relation to the information is frequently involved.

4 Computing: Performing arithmetic operations and reporting on and/or carrying out a prescribed action in relation to them. Does not include counting.

5 Copying: Transcribing, entering, or posting data.

6 Comparing: Judging the readily observable functional, structural, or compositional characteristics (whether similar to or divergent from obvious standards) of data, people, or things.

PEOPLE: Human beings; also animals dealt with on an individual basis as if they were human.

0 Mentoring: Dealing with individuals in terms of their total personality in order to advise, counsel, and/or guide them with regard to problems that may be resolved by legal, scientific, clinical, spiritual, and/or other professional principles.

1 Negotiating: Exchanging ideas, information, and opinions with others to formulate policies and programs and/or arrive jointly at decisions, conclusions, or solutions.

2 Instructing: Teaching subject matter to others, or training others (including animals) through explanation, demonstration, and supervised practice; or making recommendations on the basis of technical disciplines.

3. Supervising: Determining or interpreting work procedures for a group of workers, assigning specific duties to them, maintaining harmonious relations among them, and promoting efficiency. A variety of responsibilities is involved in this function.

4 Diverting: Amusing others. (Usually accomplished through the medium of stage, screen, television, or radio.)

5 Persuading: Influencing others in favor of a product, service, or point of view.

6 Speaking-Signaling: Talking with and/or signaling people to convey or exchange information. Includes giving assignments and/or directions to helpers or assistants.

7 Serving: Attending to the needs or requests of people or animals or the expressed or implicit wishes of people. Immediate response is involved.

8 Taking Instructions-Helping: Helping applies to "non-learning" helpers. No variety of responsibility is involved in this function.

THINGS: Inanimate objects as distinguished from human beings, substances or materials; machines, tools, equipment and products. A thing is tangible and has shape, form, and other physical characteristics.

0 Setting up: Adjusting machines or equipment by replacing or altering tools, jigs, fixtures, and attachments to prepare them to perform their functions,

change their performance, or restore their proper functioning if they break down. Workers who set up one or a number of machines for other workers or who set up and personally operate a variety of machines are included here.

1 Precision Working: Using body members and/or tools or work aids to work, move, guide, or place objects or materials in situations where ultimate responsibility for the attainment of standards occurs and selection of appropriate tools, objects, or materials, and the adjustment of the tool to the task require exercise of considerable judgment.

2 Operating-Controlling: Starting, stopping, controlling, and adjusting the progress of machines or equipment. Operating machines involves setting up and adjusting the machine or material(s) as the work progresses. Controlling involves observing gages, dials, etc., and turning valves and other devices to regulate factors such as temperature, pressure, flow of liquids, speed of pumps, and reactions of materials.

3 Driving-Operating: Starting, stopping, and controlling the actions of machines or equipment for which a course must be steered, or which must be guided, in order to fabricate, process, and/or move things or people. Involves such activities as observing gages and dials; estimating distances and determining speed and direction of other objects; turning cranks and wheels; pushing or pulling gear lifts or levers. Includes such machines as cranes, conveyor systems, tractors, furnace charging machines, paving machines and hoisting machines. Excludes manually powered machines, such as handtrucks and dollies, and power assisted machines, such as electric wheelbarrows and handtrucks.

4 Manipulating: Using body members, tools, or special devices to work, move, guide, or place objects or materials. Involves some latitude for judgment with regard to precision attained and selecting appropriate tool, object, or material, although this is readily manifest.

5 Tending: Starting, stopping, and observing the functioning of machines and equipment. Involves adjusting materials or controls of the machine, such as changing guides, adjusting timers and temperature gages, turning valves to allow flow of materials, and flipping switches in response to lights. Little judgment is involved in making these adjustments.

6 Feeding-Offbearing: Inserting, throwing, dumping, or placing materials in or removing them from machines or equipment which are automatic or tended or operated by other workers.

7 Handling: Using body members, handtools, and/or special devices to work, move or carry objects or materials. Involves little or no latitude for judgment with regard to attainment of standards or in selecting appropriate tool, object, or material.

Table E.1 Parallelism Between DPT and RIASEC Work Activity Scales

DPT	RIASEC	Males		Females		White Males Emp. ≥ 30 hr/wk	
		r_{xy}	n	r_{xy}	n	r_{xy}	n
DATA-HI /	WORK-I	.600	550	.422	620	.602	428
DATA-LO /	WORK-C	.915	555	.905	624	.916	432
PEOPLE-HI /	WORK-S	.839	553	.740	624	.835	428
PEOPLE-LO /	WORK-E	.984	552	.963	625	.986	429
THINGS-HI /	WORK-R	.887	553	.582	626	.890	429

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